

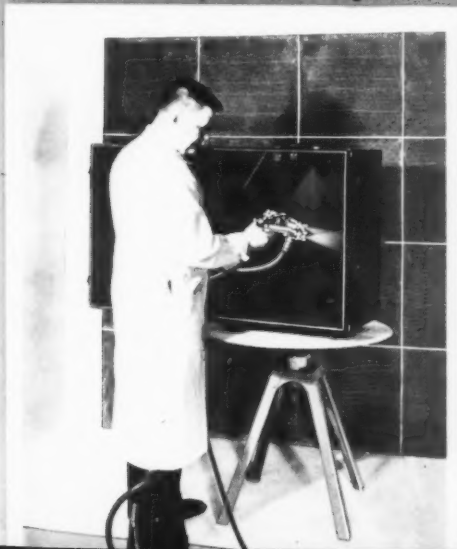
OCTOBER • 1959

VOL 16 #10

Metal Products Manufacturing

*Serving the
Appliance and
Fabricated Metal Products
Industry*

The Future for Plural Component Resins — Page 34



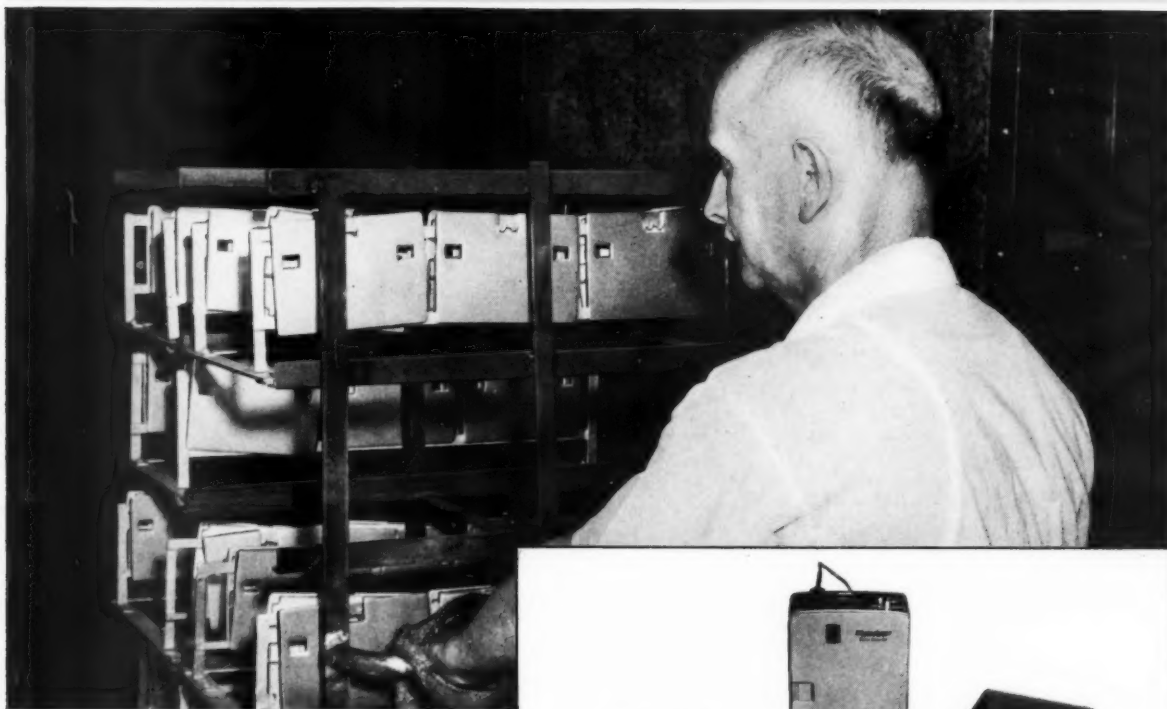
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The Sunbeam
"Dual Deluxe"
Vacuum Cleaner
with Turbine-
Driven Brush
Page 28

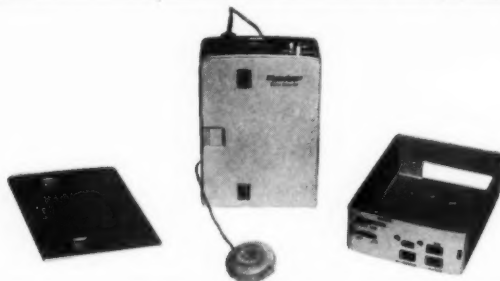


At Dictaphone Corporation:



▲Even though each successive coating is cured in this batch oven, Epon resin coatings resist yellowing or clouding. Formulator: I-Sis Chemicals, Inc., Springdale, Connecticut.

The Dictet recorder, made by Dictaphone Corporation, Bridgeport, Connecticut, is protected from perspiration, acids, and abrasion by tough Epon resin-based coatings. ►



With Epon® resin-based coatings, Dictet recorders keep their "factory-fresh" look for years

Dictaphone's Dictet recorders are world-famed for their mechanical dependability. But exterior finishes sometimes failed to resist perspiration acids, abrasion, and impact.

Dictaphone turned to Epon resin-based formulations for their answer . . .

A three-coating system based on Epon resins—primer, aluminum, and clear—was thoroughly checked before being placed on the production line. Result: the clear, marble-like coatings had exceptional hardness which seemed to increase with aging

. . . "the closest we can come to a nickel or chrome plating," reported paint technicians.

Have you a coating problem? An Epon resin-based formulation may be *your* answer, too. Its outstanding abrasion and chemical resistance make it an ideal all-purpose industrial coating.

Call on Shell Chemical sales offices for names of suppliers. And write for the full Epon resin coatings story, "Planning to Paint a Pyramid?" SHELL CHEMICAL CORPORATION, 50 West 50th Street, New York 20, New York.

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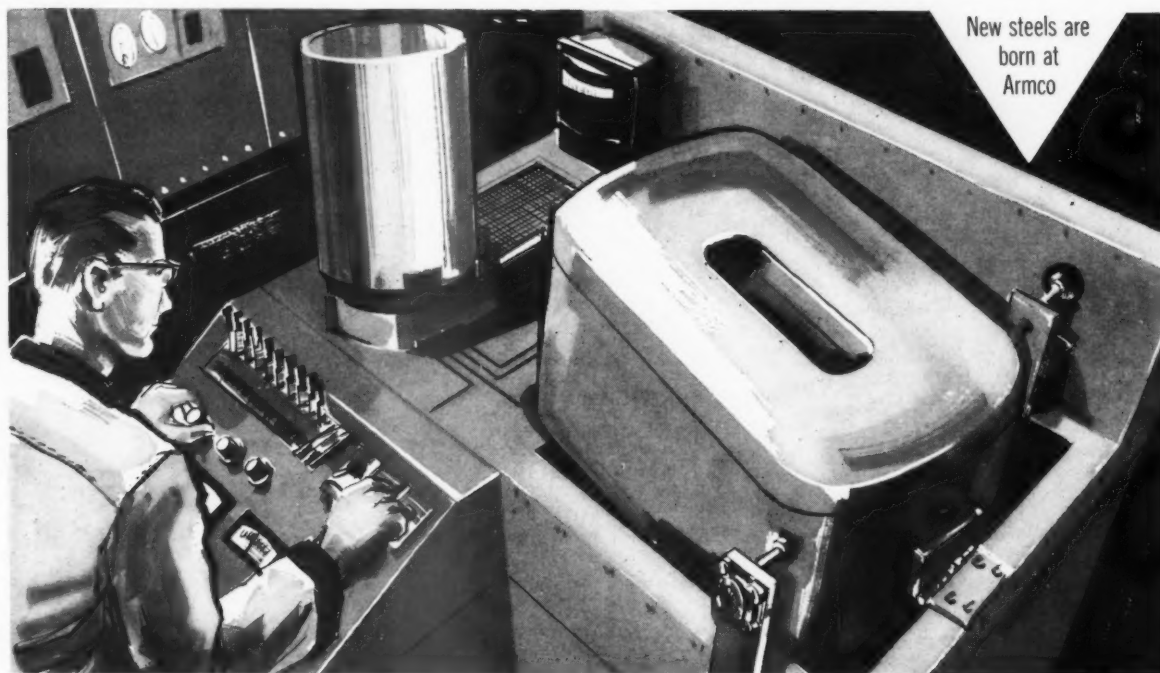
Eastern District
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New York 20, New York

Western District
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Downey, California

IN CANADA: Chemical Division, Shell Oil Company of Canada, Limited, Toronto



IN LABORATORY TESTS AS IN APPLIANCE SERVICE...



Armco research engineers designed this equipment to study heat reflectivity and emissivity of various materials.

Armco ALUMINIZED STEEL reflects up to 80% of radiant heat

Here's what these tests show about heat-reflectivity of ALUMINIZED STEEL Type 1:

At room temperature, ALUMINIZED STEEL reflects more than 80 per cent of the radiant heat that meets it. Its heat reflectivity also remains excellent up to 900 F—much higher than other appliance materials tested, such as porcelain enamel and painted steel—even stainless steel.

BACKED BY 20 YEARS' SERVICE

Armco originated this special hot-dip aluminum coated steel in 1939. Since then, appliance manufacturers have employed its outstanding heat reflectivity and structural strength to economically improve performance of clothes dryers, ranges, ovens, and space heaters. At the same time many have taken advantage of its great resistance to heat or combinations of heat and corrosion.

Get full information on this low-cost steel that handles heat. Just fill in and mail the coupon.

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3179 Curtis Street, Middletown, Ohio

Send more information on Armco ALUMINIZED STEEL Type 1.

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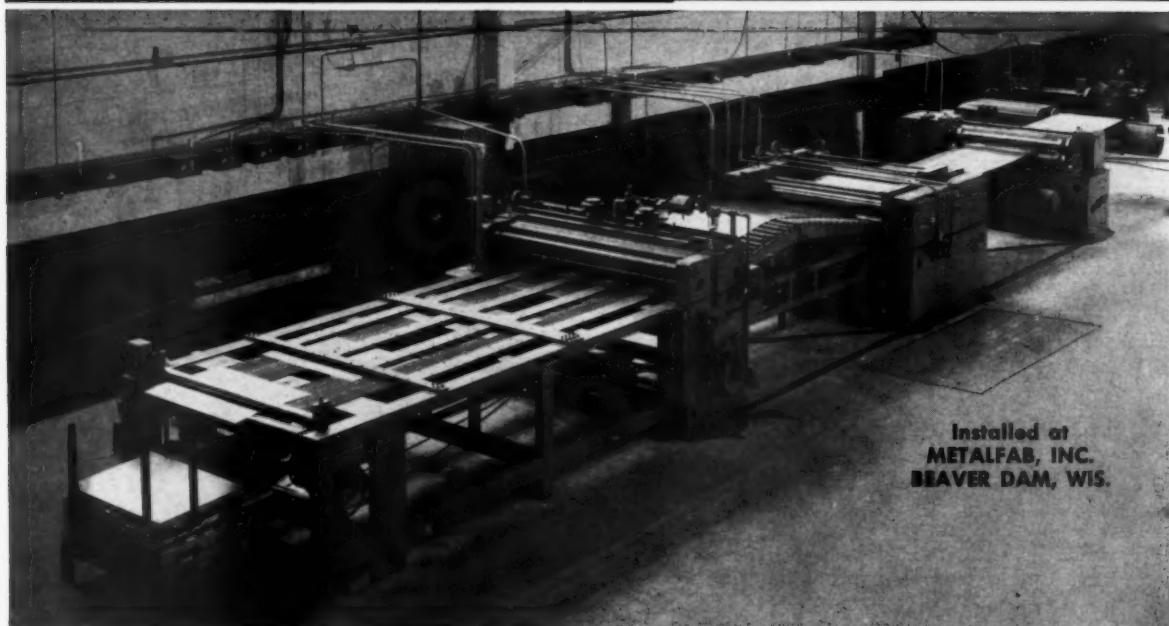


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MPM

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METAL PRODUCTS MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. The editorial scope covers design, engineering, market and statistical information and technical and practical information on plant facilities and all phases of manufacturing "from raw metal to finished product." Free controlled circulation to top management, purchasing, engineering and key plant management and supervision in metal product manufacturing plants. To others, subscription price is \$8.00 per year, domestic. To all other countries \$10.00 per year (U.S. funds). Single copies, \$1.00.

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USS Vitrenamel takes severe shaping

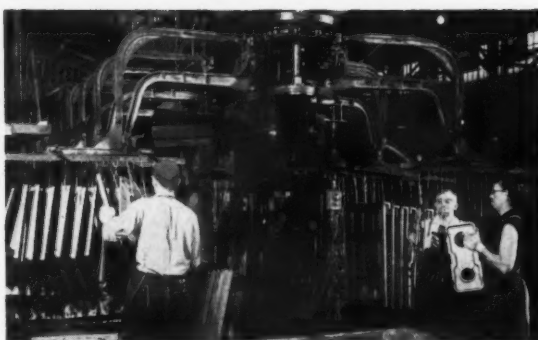


g. fires without flaws

The George D. Roper Corporation has a proud slogan—"America's Finest Gas Appliances." When you walk through the Roper plant at Kankakee, Illinois, you see why. Their volume is high but their standards are higher. Every part they make is painstakingly inspected to eliminate flaws.

Roper uses quality USS Vitrenamel enameling sheets for stove parts. The metal is highly ductile

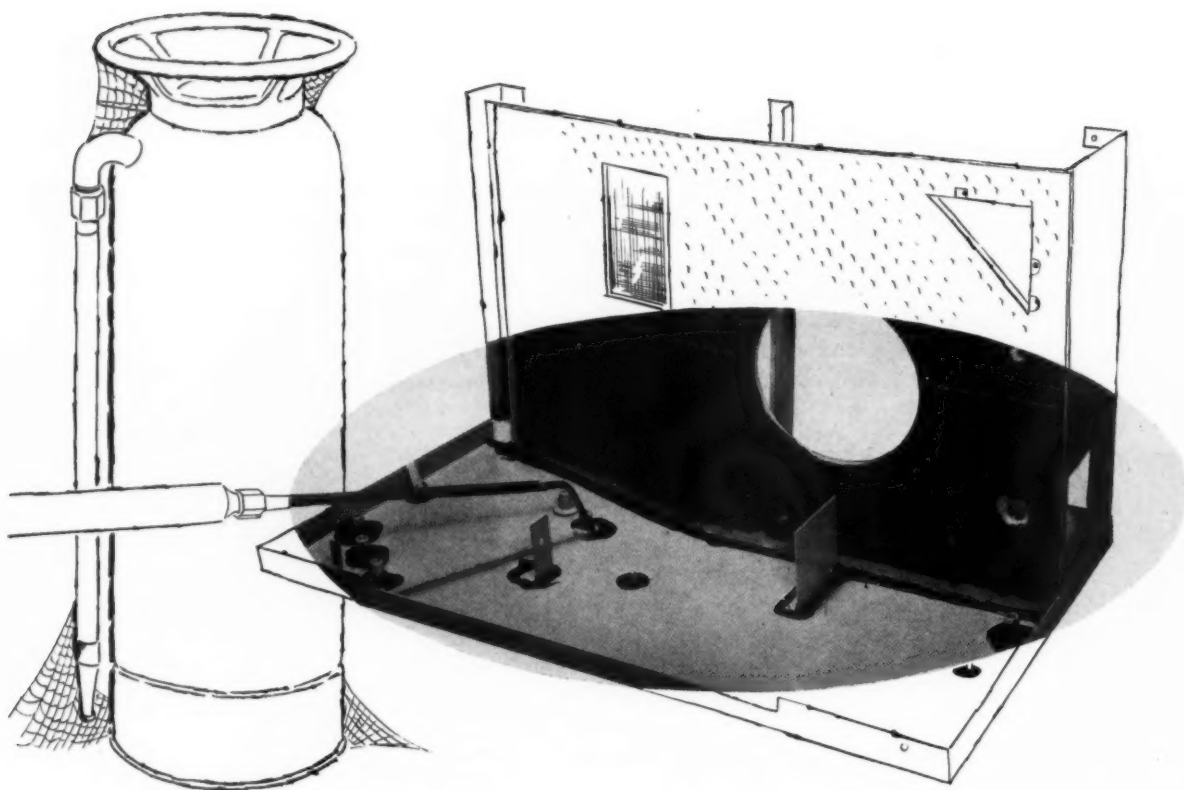
—takes severe shaping without cracks. It takes a smooth porcelain coat that fires with complete freedom from surface defects. And Vitrenamel parts retain their true shape when fired because the low carbon and manganese content gives the metal resistance to warpage and sagging at high temperatures. Specify USS Vitrenamel, available in sheets or coils. *USS and Vitrenamel are registered trademarks*



United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
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United States Steel





seal with safety . . .

#144.7Mastic is self-extinguishing!

This fire-safe mastic is an ideal air-conditioning sealer. Because it is self-extinguishing after the solvent has been released, and because it is pumpable, #144.7 is well suited to fast production-line applications. For example:

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- Sealing air-directing partitions.
- Protecting projections, welded studs, annular areas, etc., from corrosion.
- Sealing to keep condensate and air where they belong.
- Holding sound deadening pads in place.
- Miscellaneous applications on dual-purpose air conditioning and heating equipment.

...AND DON'T FORGET THE OTHER #144-SERIES SEALERS

Whatever the sealing characteristic you need, there's probably a #144 Sealer to fill the bill: fast-drying or slow-drying; odorless; capable of retaining "life" under water; break-down resistance to frequent cycling; ability to span seams and gaps without slumping; to take paint baking temperatures without running out of place.

WANT A SAMPLE? Write Dept. R-6, describing your product needs.



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STOVES



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The custom textured splash panel, in a satin and bright starburst, makes every owner of a George D. Roper Corp. range feel like an "Epicure".

Spice-magic is yours in over 60 tantalizing CroRoto and RoDie patterns, richly fabricated and finished at Croname's huge, efficient new 8½ acre facility. Available in all standard anodized, lacquered, painted and plated finishes on any metal. Highly workable-easy to clean-scratch resistant.

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Who needs one?**

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THE BEAUTY OF **utility**



The Stainless Steel products illustrated are made by STEELEX Corporation, Williamsport, Pa.

in **Superior Stainless**

STRIP STEEL

SERVICE-ABLE Superior Stainless performs handsomely in these functional utensils—always bright, easy to clean, with extra strength for extra years of use. • Superior Stainless delivers handsome performance in fabrication, too . . . handles *right* because of superior quality control at every stage of manufacture. • We have much to offer in technical assistance. Write us on your stainless applications.



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OF
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MPM Suggestion Box

three years of
research and development
results in cost economies
and reduced tooling time

Improved tooling method permits medium-production runs

THROUGH THE MEDIUM of a new epoxy-alloy composition tooling, medium-production run metal forming has been greatly implemented. Based upon an epoxy resin system reinforced with metal or glass fibers and metal fiber flocking, this tooling method is said to permit up to 150,000 stampings where light-gauge softer metals are to be formed. This technique is also applicable to prototype and development-type metal forming dies, secondary operation dies, hydroform and rubber pad forming dies, stretch dies, and fixtures.

Metal or glass fibers used as reinforcements

Reduced tooling time and cost economies, in common with plastic tooling, are inherent in this new technique. Additional improvements over conventional plastic tooling include mass casting of the tools and dies, increased thermal conductivity, and greater modulus and impact strength.

Radiator part tool is tested under normal working conditions at Long Mfg. Div., Borg-Warner Corp., Detroit, Mich. Costs are much less than all-metal dies.



Approximately seventy epoxy-alloy dies have been put into commercial operation; one such die has stamped out over 130,000 automotive radiator covers of .025-inch thick brass. Another has formed more than 65,000 units from .035-inch thick steel for a refrigerator section. This die was delivered in five weeks, 50 per cent faster than metal dies. Thirty-five epoxy-alloy dies for a military project were built in 15 weeks at a cost of \$250,000. Conventional metal tools, it is estimated, would have required up to 18 months of tooling time at an approximate cost of \$2,000,000.

Investigations cover three years

An extensive three-year research and development program has preceded the announcement of the epoxy-alloy process. These investigations have shown that draw dies of epoxy-alloy can be used for: (1) runs of 50,000 to 150,000 or more stampings of the thinner, more

This set of dies is used to produce a bottom panel for a refrigerator at Hotpoint Co., Chicago, Ill. The epoxy-alloy inserts produce a cavity in the stamping.



After 130,000 units of .025-inch thick brass had been run, the full year's requirement for one auto model, parts were still passing quality inspections.

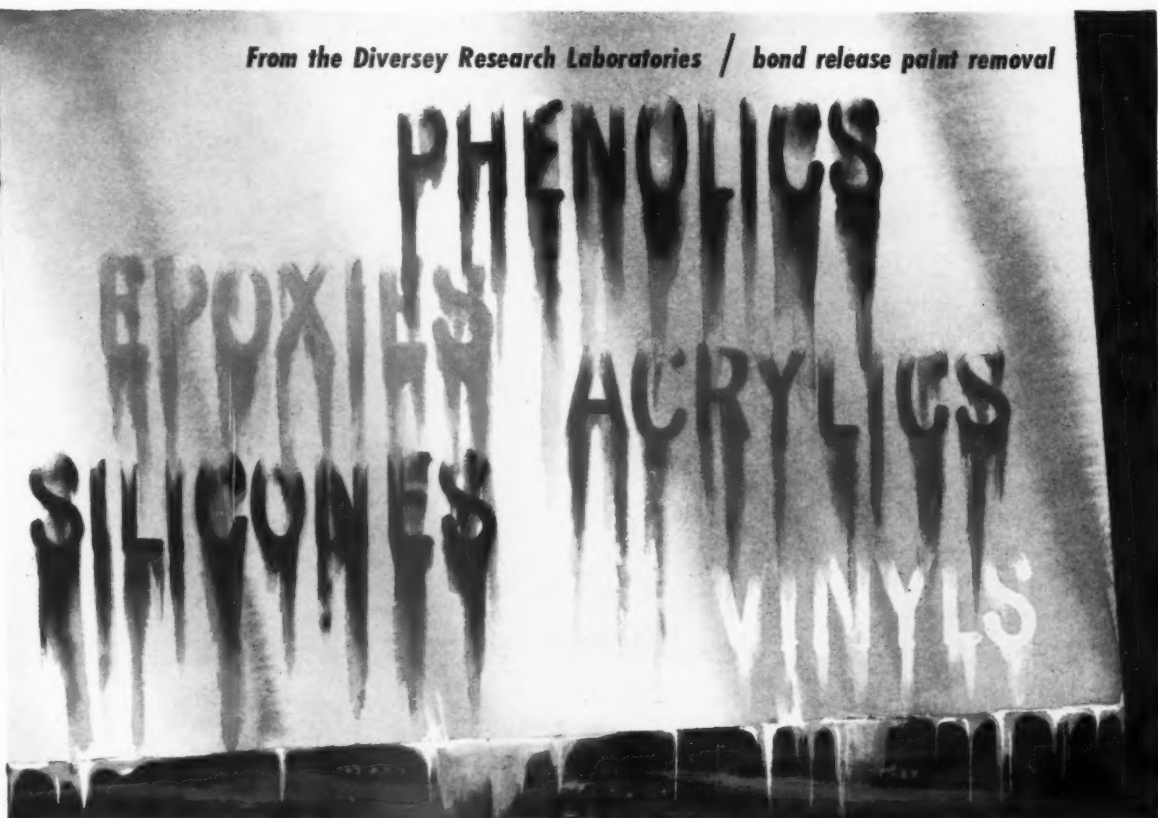
easily-formed metals; (2) runs of 10,000 to 50,000 stampings in which epoxy-alloy contoured punches and pads are used with metal inserts, draw rings, and blank holders; (3) runs of 1,000 to 10,000 stampings without the use of metal rings or inserts; and (4) prototype or development runs encountering deep draws of heavy metal or large compound-contoured stampings up to one-quarter inch thick in steel.

For further information, contact Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

More than 65,000 parts have been produced on these dies. Die was delivered in five weeks compared to minimum quoted delivery on steel die of ten weeks.



From the Diversey Research Laboratories / bond release paint removal



To be sure of the right Paint Stripper for any finish . . . talk to DIVERSEY

. . . Whether your job involves stripping epoxies, alkyds, vinyls or other modern organic finishes . . . there is a stripper developed by the Diversey Research Laboratories that will produce a clean surface quickly and economically.

Each DIVERSTRIP paint stripper is formulated for (1) the type of metal or alloy to be stripped, (2) the method of application and (3) the type of finish to be removed. With this complete line to select from, you're always sure of using the fastest, most efficient and economical stripper for your job.

Write now for your copy of Diversey's Paint Stripper Guide. For all your metal stripping, cleaning and surface preparation needs, consult your Diversey D-Man. He has the training and technical experience to solve your problems, cut your costs. The Diversey Corporation, 1820 Roscoe Street, Chicago 13, Illinois.

NAME Type, Method, Application	METHOD OF APPLICATION AND APPLY TO FROM TEMPERATURES	USE ON THESE FINISHES	USE ON THESE METALS	REMARKS
whenever your stripper requirements... DIVERSEY has the answer				
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...bakes on, dries tough, won't crack, gives metal products a "new look" that builds sales

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MPM-10

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CITY _____ ZONE _____ STATE _____

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THE SIMPLIFIED PHOSPHATE OPERATION

- 1 Combination cleaner and phosphatizer.
- 2 Water rinses.

This test sheet was not protected with Mac-Bond.

- 3 Provides a chemically sealed coating for maximum corrosion resistance.

This test sheet was protected with Mac-Bond 71-D.

THAT GIVES THE PERFECT PAINT BOND

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BEING USED
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• APPLIANCES • TAPE
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FURNITURE • TOYS •
OFFICE FURNITURE •
AND MANY OTHER
PRODUCTS

Mac-Bond 71-D is a highly efficient and economical cleaner and phosphatizer suitable for pressure washers and still-tank cleaning and giving a maximum paint bond and rust resistant coating.

Metal products manufacturers, both large and small, are finding the Macco 3-Stage System is solving their paint-adhesion problems with utmost dependability and economy. (Also adaptable for one to six stage operations.)

WRITE OR PHONE FOR A MACCO SERVICE ENGINEER TO SHOW YOU

HOW THIS SYSTEM CAN SAVE YOUR PLANT MANY OPERATING DOLLARS

MACCO

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THERE'S A MACCO CLEANER COMPOUNDED TO SOLVE
YOUR PARTICULAR PROBLEM • PHONE PRESCOTT 9-0800

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ADDS THE RIGHT TOUCH TO YOUR SALES!

Pyramid sparkling stainless trim adds the *right touch* that means the difference at point of sale! From simple trim to complex frames, Pyramid's wide line of metal mouldings can help you put the sale across by providing the *extra spark* that means *extra sales*.

Economical, too. Individual frames, for example, can be tailored from standard sections—providing originality at little or no tool cost. Or intricate rings can be roll formed in endless spirals—eliminating waste, yet holding close tolerances.

And if your needs are special, you'll find you'll do much better working with specialists. Pyramid has specialized in making metal mouldings for over thirty years.

Why not put this experience to work for you—today!

Pyramid Mouldings Inc.

5365 WEST ARMSTRONG AVE., CHICAGO 46, ILL.
UPLAND, CALIFORNIA BRONXVILLE, NEW YORK



from the Editor's Mail

Foamed in place insulation

Gentlemen: Please send reprint of your February article, "A production process for 'foamed in place' insulated cabinets."

Also the article in the same issue, "Westinghouse builds cabinets of metal-foam-metal."

Do you know of any other refrigerator manufacturers using foamed polystyrene or urethane insulation, actually foamed in place in the cabinet?

Anna A. Noone, New Products Editor
Electrical Merchandising Magazine
New York, N. Y.

Copies of the two articles requested have been mailed. While there are several manufacturers of refrigerators investigating and experimenting with foam insulation, Westinghouse was the first to make a formal announcement of its use in production. As additional manufacturers announce its use, reports will be published in MPM.

PMI coverage

Gentlemen: I have long been meaning to express our appreciation of the coverage you gave our Pressed Metal Institute Spring Technical meeting. In my opinion, an excellent job was done,

Carter C. Higgins, President
Pressed Metal Institute

Our editors have, for a number of years, been covering the PMI Spring Technical Conference meetings, and reporting the highlights of these.
The Editors

"The vital link"

Gentlemen: The Appliance Parts Jobbers Association are proud to send you their new booklet entitled "The Vital Link."

All of the major trade publications have given considerable coverage to the growing importance of adequate parts distribution and good appliance service. Mr. James H. Goss, the vice president of the General Electric Co., emphasized service more than anything else in his recent address at the annual convention of the American Home Laundry Manufacturers' Association.

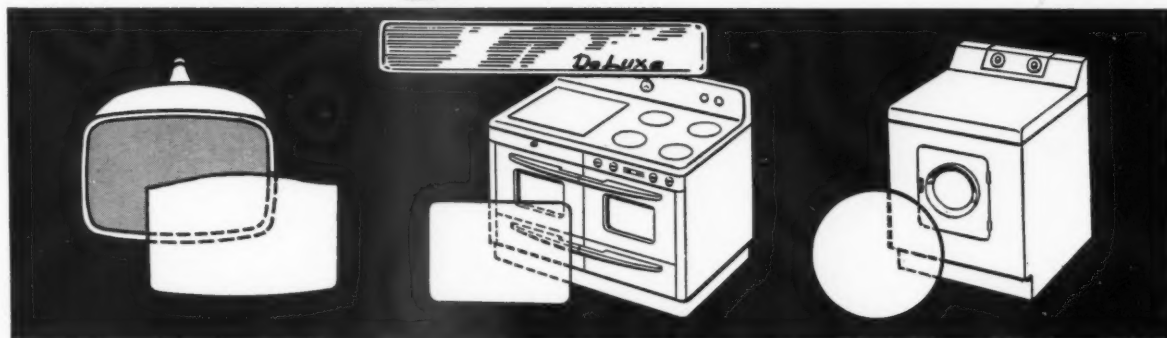
With all of the conversation and publicity concerning appliance service, our association feels that this booklet is most timely as it points out the fact that we are spending considerable time and money promoting and encouraging the education of appliance servicemen everywhere.

Our association is basically involved in the distribution of home laundry equipment parts; however, we are justifiably proud that our members have been instrumental in conducting the ma-

to Page 22 →

MARSCO

Glass



for TELEVISION • MODERN RANGES • WASHING MACHINES

Let MARSCO'S Craftsmen-Engineering Team

IMPART TO YOUR PRODUCT ALL THE ADVANTAGES OF GLASS

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- AIRCRAFT ACCESSORIES
- PHOTOGRAPHIC EQUIPMENT
- LIGHT LENSES
- DIALS & NAME PLATES
- TELEVISION EQUIPMENT
- INSTRUMENTS
- MEDICAL EQUIPMENT
- BACKGUARD GLASS FOR RANGES
- LAMP GLASS
- SHELVEING

Special Shapes for: Instruments, Gauges, Household and Industrial Appliances.

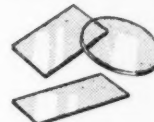
Marsco



Bent Glass



Convex Glass



Heat-treated Glass

MARSCO MFG. CO., 2909 S. HALSTED ST., CHICAGO 8, ILL.

REPUBLIC STAINLESS STEEL PROVIDES UNIFORM QUALITY



Here's a good example, illustrating how uniform quality pays off in superior products. The material is Republic ENDURO® Stainless Steel Strip—used to fabricate steel parts around heating elements of electric ranges. This application requires a combination of special characteristics.

Stainless meets these requirements by offering a combination of advantages unobtainable in any other commercial metal. It provides exceptionally high resistance to heat and corrosion; doesn't tarnish, is easy to clean and keep clean; has no applied surface to chip, peel, or wear away.

Tuttle and Kift Division, Ferro Corporation, Chicago, Illinois, manufacture a large share of all assembled electric range heating elements produced. In doing so,

they find they can depend on Republic Stainless Steel to meet the rigorous standards they demand. Most significant of all, they find the quality is consistent. They also like Republic's excellent metallurgical and delivery services.

Fabrication of heating elements for electric ranges is but one of many applications where the uniformly high quality of Republic Stainless Steel produces excellent results. Use this aristocrat of metals to give your product prestige, eye-appeal, buy-appeal, and built-in sales advantages never before experienced.

It will pay you to get full information on Republic Stainless Steel. Contact your local steel service center, your Republic sales office, or mail the convenient coupon.

FOR SUPERIOR FABRICATION



CONSISTENT PAINT-HOLDING CAPACITY makes Republic Electro Paintlok® ideal for water cooler housings, or for exterior panels of ranges, freezers, dryers, washers, air-conditioners and other major appliances and cabinets for home, commercial and industrial applications. Produced by electro-galvanizing and a chemical treatment process for paint adherence. Electro Paintlok Sheets are shipped from the mill in prime condition for painting.



SUPERIOR FABRICATION FOR OUTDOOR REQUIREMENTS is a characteristic of Republic Galvannealed Sheets. Experience proves its durability, even when only one side is painted. Hot dip galvanizing plus special heat treatment gives Galvannealed its weather-resistant qualities plus a surface exceptionally well suited to take and hold paint. Forming operations fail to damage these outstanding surface characteristics. Flaking or peeling is practically eliminated.



UNIFORMLY TIGHT ZINC COATING on Republic Continuous Galvanized Sheets won't crack, flake, or peel even under the most severe forming operations. Better corrosion resistance is another point that makes Republic your best choice for many fabricating requirements.

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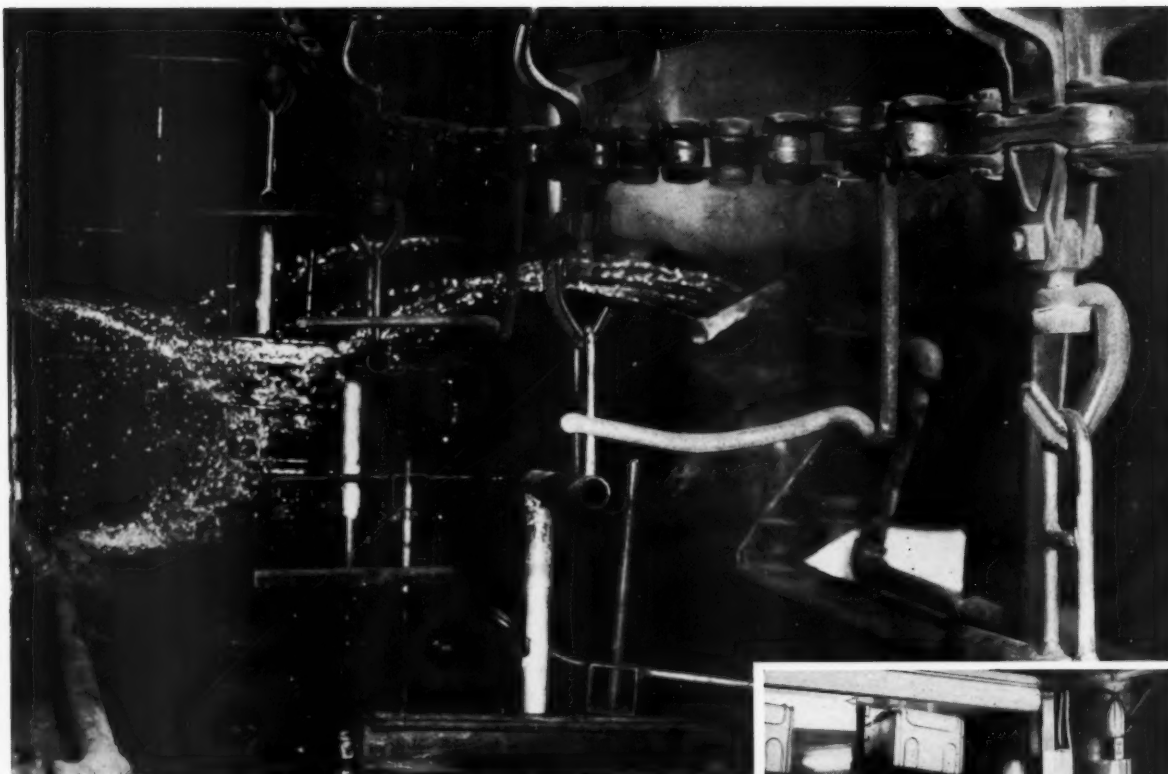
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KERNS' SOLVENT TYPE STRIPPERS VITAL PART OF HOTPOINT PRODUCTION PROCESS

Continuous production processes at Hotpoint require the stripping of paint from carriers and hooks without slowing down the conveyor lines. A stripper tank is used as an integral part of the production procedures. Carriers or "hooks" are drawn through the solvent type stripper without removal from the conveyor, and then pass through a water spray for rinsing. Tank size is approximately 5,000 gallons, using 3,600 gallons of Kerns' Solvent Type Stripper and 500 gallons of water which floats on the top forming a protective blanket. 200 "hooks" an hour pass through each stripping tank every day. Yet, the Kerns' Solvent Type Stripper is changed only twice a year.

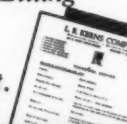
Hotpoint uses Kerns' Stripper because it has extremely long tank life with outstanding stripping power.

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Find out, today, what Kerns' Strippers can do for your operation. Try it . . . we supply material for production test . . . no formal invoice rendered unless completely approved in production. Remember . . . with Kerns you get compounds tailored to your production procedures.

Kerns' Solvent Type Stripper assures that "hooks" are absolutely clean before entering leak testing tank which must be kept completely free of any foreign matter at all times.

Write for further information regarding Kerns' Memo Billing Trial Basis, Technical Data Brochure with Stripper Selection Chart.



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The K-S Improved Interval Timer is accurate and it retains its accuracy—needs no servicing.

The K-S Timer is engineered for easy, economical installation by the appliance manufacturer.

Here are some of the basic reasons:

- Standard models, all self powered, provide a bell alarm, a control switch and overload circuit breaker in any desired combination.
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- A HOLD feature acts to hold the switch closed

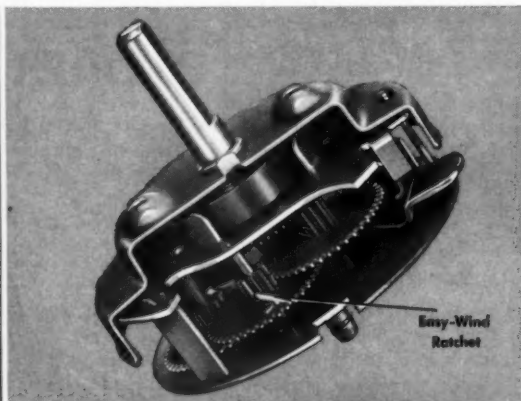
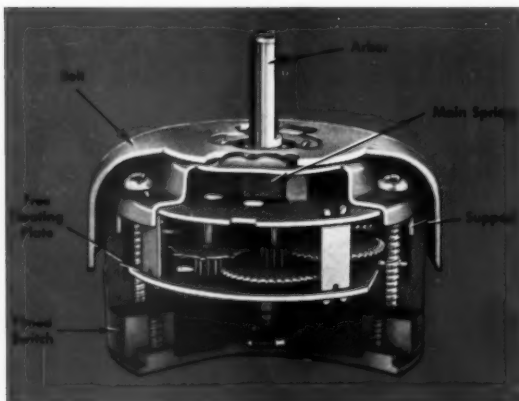
with the timer mechanism stopped until the dial is returned to the "off" position.

● Approved by Underwriters' Laboratories for 15 amp., 1/3 hp., 125v A.C.

● Permanently lubricated at the factory.

● May be mounted in any position—only 2 screws required.

For complete specifications and wiring diagrams write for Bulletin 575.

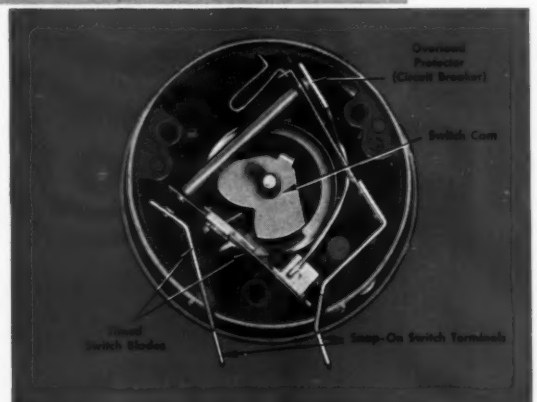


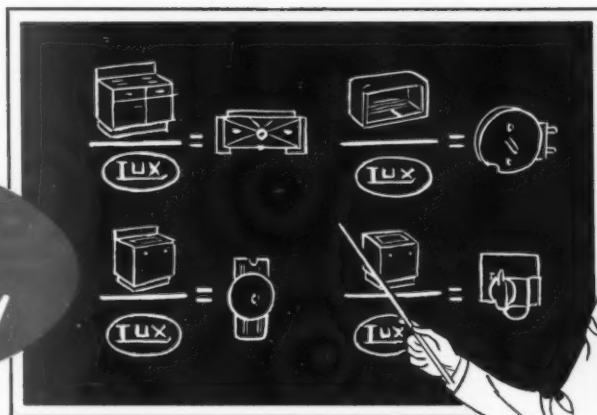
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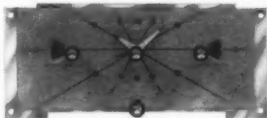
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The Common Denominator in solving Appliance **TIMER** Problems



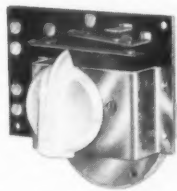
5866 SERIES: New, fashionable *slimtrim* model. Combination fully automatic Range Timer and one hour electric Minute Minder. Exclusive bell chime reminder signal. Custom designs available.



2500 SERIES: Spring wound all purpose mechanical timer, single pole, single throw, normally open switch. Time range 15 minutes to 4 hours. Approved by U. L. & CSA.



1600 SERIES: Dryer Minder Timer with time cycles of 15, 30, and 60 minutes. Single pole or double pole switch. Single stroke bell signal one of several optional features.



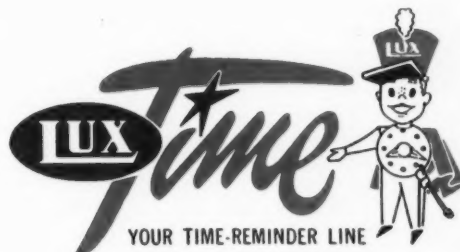
7000 SERIES: New, improved Dryer Timer. 25 amp., 230 v heater rating; 1/3 H.P., 115 v motor rating; AC only. Approved by U. L. and CSA. One piece shaft assembly ensures alignment and prevents loosening.

Different appliances are designed for different duties . . . but in virtually all of them a reliable, accurate timer is commonly indispensable.

And Lux, as one of the nation's leading timer manufacturers, works constantly to produce new products that will meet the appliance world's continuing demands for improved design and performance.

Now more than ever before, makers of ranges, rotisseries, washers, toasters, refrigerators, air conditioners and similar equipment look to Lux for quality construction and dependable performance that's backed by years of experimental research and development. Look at these four timers from the diverse Lux line . . . and let us know if you want more information on them . . . and on other Lux models, too. Remember—Lux . . . first . . . for lasting time, *and* for lasting customer satisfaction.

LUX...first...for lasting TIME



THE LUX CLOCK MANUFACTURING COMPANY, INC. • 95 JOHNSON STREET • WATERBURY, CONN.

66th annual meeting of the Pacific Coast Gas Association



Walter T. Lucking (left), new president of Pacific Coast Gas Assn., receives gavel from outgoing president R. R. Blackburn.

AN MPM PRESSTIME REPORT

MORE THAN 450 DELEGATES from gas utilities and manufacturing firms in seven western states and British Columbia converged on the Ambassador Hotel in Los Angeles Sept. 9-11 for the Pacific Coast Gas Assn.'s 66th annual meeting.

The convention was presided over by R. R. Blackburn, senior vice president of Southern California Gas Co., who is president of the association for 1958-59. Top speakers from all segments of the gas industry addressed sessions of the convention, covering trends and developments that have made the industry the nation's fifth largest.

Among the outstanding figures who spoke were J. Theodore Wolfe, president of the American Gas Assn. and president of the Baltimore Gas & Electric Co.; Edward A. Norman, president of the Gas Appliance Manufacturers Assn. and president of Norman Products Co., Columbus, Ohio; and Elisha Gray II, chairman of the board, Whirlpool Corp.

In his talk, Gray stressed the fact that the tremendous postwar increase in research and development expenditures (from \$1.5 billion in 1945 to over \$10 billion in 1959) "has become the economic spearhead of our dynamic growth" and that out of it should come new markets, new jobs, new profits, and an expanding high standard of living. However, he said, unless new and better ways are discovered to sell the public

speeches by Whirlpool president, missile expert highlight convention

the products of this development, the cost of such research will become prohibitive and our economic progress will be retarded.

"As early as next year," Gray said, "we'll see major and important new gas developments in refrigeration and in gas cooking. . . . If we develop new types for gas cooking appliances, gas-fired dishwashers, gas air conditioners, gas refrigerators, gas incinerators—perhaps even a way of converting the energy in gas or other forms—we'll also have to develop methods of marketing them. We won't be able to afford the luxury of a merchandising mind that says, 'Keep those new things. I don't care if they are better. It's easier to sell these \$99 ranges.'"

Most manufacturers, Gray declared, are aware of the lag between product innovation and marketing progress and are trying to do something about it. Whirlpool, for example, is establishing a dealer development department to help retailers sharpen their management and merchandising mind, and has endowed a chair of marketing at the American University in Washington, D.C., to conduct marketing research and develop ways of communicating its findings.

Convention attendees also heard speeches by leaders in other areas of national importance. Among these was William L. Young, operations manager, Convair-Astronautics, General Dynamics Corp., who reviewed the development, by his firm, of the Atlas intercontinental ballistic missile.

Young climaxed his speech by announcing that, earlier the same morning (Wed., Sept. 9), the Atlas had been fired successfully from Vandenberg Air Force Base in California for the first time. Young saluted the role of gas and other energy fuels, as well as the metals industry, in the history and development of the Atlas.

Awards for outstanding achievement during the year were presented to individual members and organizational groups. At the final session of the convention, a new slate of officers were installed for the 1959-60 year, headed by Walter T. Lucking as president. Lucking is president of Arizona Public Service Co., Phoenix, Ariz.

Editor's mail

→ from Page 14

jority of service clinics in the United States on home laundry equipment.

We trust that you will read the brochure which we are mailing under separate cover, and find it both timely and informative.

Kenneth Adler, President
Appliance Parts Jobbers Association, Inc.
Portland, Ore.

Mr. Goss' remarks on home laundry appliance service, to which Mr. Adler refers, will be found in an MPM staff report on the 1959 AHLMA convention, Page 30, August issue.

The Editors

Case history of porcelain enameling

Gentlemen: We have become acquainted with your trade publication, METAL PRODUCTS MANUFACTURING, through Mr. Boude Storey, Jr., of the Atlas Metal Works here in Dallas. We have found it to be a very interesting and informative publication, especially since we are in the business of manufacturing metal products for the coin-operated washateria business.

Specifically, we are manufacturing the Weben universal utility units, coin meter boxes, hot water boilers, and base duct units, all of which are being used throughout the country in coin-operated washaterias. In addition to this equipment, we are now in the planning stages of establishing facilities for glass lining commercial and industrial heating equipment.

In this connection, we would like to obtain a copy of your December, 1957 issue which contained "Case history of a new type porcelain enameling furnace."

Also, we would like to be placed on your controlled circulation list for future copies of METAL PRODUCTS MANUFACTURING.

Chuck Bevier, Chief Engineer
Western Boiler Engineers, Inc.
Dallas, Texas

Concerned about architectural porcelain enameling

Gentlemen: For some time now I have been very much concerned about the future of architectural porcelain enameling, and the other day, having some free time, I devoted it to running through architectural magazines. In doing this, I noted some very fine ads by the brick, glazed tile, ceramic tile, and concrete block manufacturers. These ads were all in color and explained in very precise sentences how the materials could be used in the building trade. But there was not one aggressive ad about porcelain enameling.

In today's competitive market this, to me, is a very sad situation, and I hope the trade realizes this and will take some aggressive action to do something about it.

to Page 36 →

BOLDNESS

OF

VISION *is an attribute of*



**QUIET
MINDS**

You know the kind. You may be one yourself—the quiet man who thinks and ponders and reflects on a problem until the answer, often an unexpected one, comes to light.

The quiet minds at Pemco have produced some great advances in the ceramic industry. If you're tackling a new idea that will involve the factors of inorganic materials, time and temperature, Pemco would like to work with you.

RESEARCH AND A FLAME
PEMCO



Ceramic frits, inorganic pigments, vitrifiable glass colors

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Type N Type PN Type P Type B Type MA

Electric oven controls

engineered to your specifications

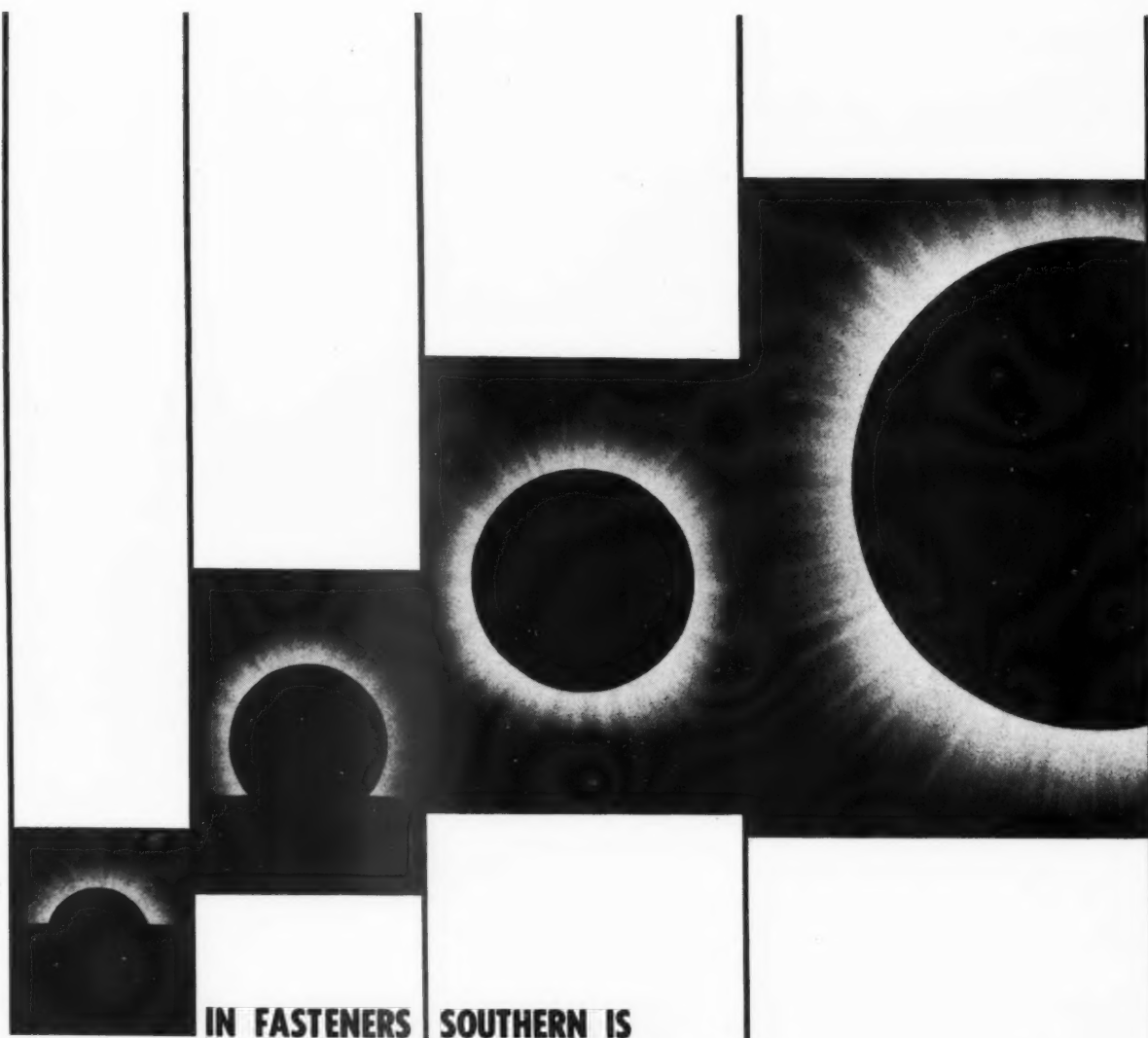
with or without
**TOP HEAT
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 single or double pole
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You'll find a dependable Robertshaw electric control for your every modern oven requirement—free-standing or built-in. These controls, developed through a quarter century of electrical design know-how, incorporate Robertshaw's famous stand-

ard of quality and trouble-free performance. We welcome your inquiries. Please send detailed specifications, or blueprints if they are available. **Indiana Division, Robertshaw-Fulton Controls Company, Indiana, Pennsylvania.** VMA 6767

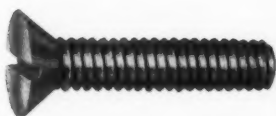
Robertshaw





IN FASTENERS SOUTHERN IS

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Reliability is the most important product Southern Screw offers its customers. From the receipt of your order through shipment, **reliability** is the important but invisible quality that has built Southern Screw's acceptance over the past twelve years. If **reliability** is one of the unseen but invaluable components of your product, get in touch with Southern Screw about your requirements and our quotation on quality screws, shipped on schedule!

**Machine Screws & Nuts • Tapping Screws
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**Manufacturing and Main Stock in
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Appliance styling with aluminum

NEW CONCEPTS in home appliance styling, planned to demonstrate the advantages of aluminum, are being presented to stylists and designers of the appliance industry by Kaiser Aluminum & Chemical Sales, Inc.

With the theme "Alumobility," combining the qualities of mobility and lightweight construction, the presentation to the appliance industry includes three different approaches to fully-integrated package kitchens, incorporating mechanical cores, which can be factory assembled and shipped as complete, or nearly complete, units.

Included are: a dual oven cooker equipped to cook from both "outside in" and "inside out;" a burnerless hot spot range with raised, glass-covered oven; a stereophonic videotelephone; an automatic remote control vacuum cleaner; a mobile entertainment center; and a mobile refreshment center.

The imaginative concepts are being shown to appliance manufacturers in dramatic wide-screen projection. The series of presentations are being held

by Kaiser Aluminum's Appliance Industry Sales and Industrial Design departments to suggest ways in which aluminum may be used in both functional and decorative applications.

The new uses take advantage of the metal's light weight with high strength, its excellent thermal properties, attractive appearance and ability to take a wide variety of handsome finish treatments, as well as its corrosion resistance and workability.

The three package kitchens are designated the "Pod," the "Modular," and the "Nautilus."

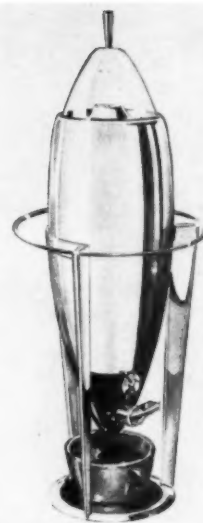
The "Pod" concept is a dome-shaped kitchen for both indoors and outdoors. Indoors, it opens to a family living area and, with its snack bar and pass-through serving center, is unusually convenient for entertaining. Its circular floor plan reduces kitchen footwork to a minimum.

Each outside skin panel of the "Pod" is a combination storm window, screen, shutter, and awning — a lightweight assembly of aluminum sheet screen and extrusions. Control of sunlight and heat

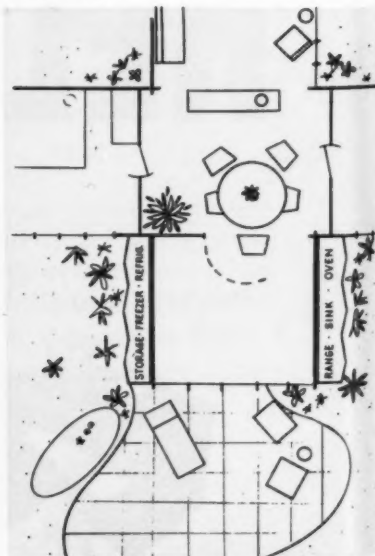
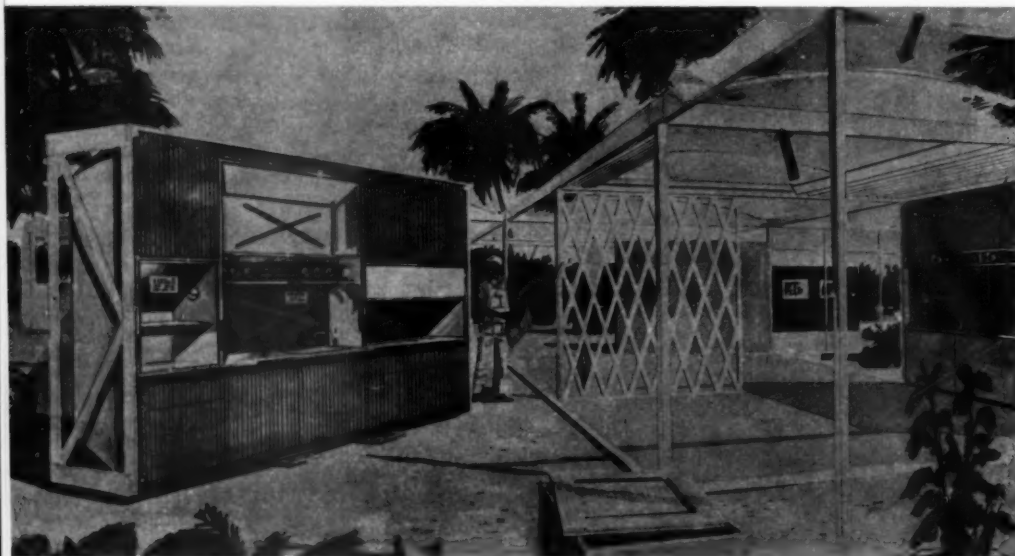
MODULAR . . . Two separate wall units make up a complete kitchen as shown here. The food preparation unit at the left incorporates range and oven with sliding glass door covers, sink, garbage disposer, plumbing and wiring core, aluminum hood and vent. And above the control panel in the center, there's even an aquarium and an herb garden!

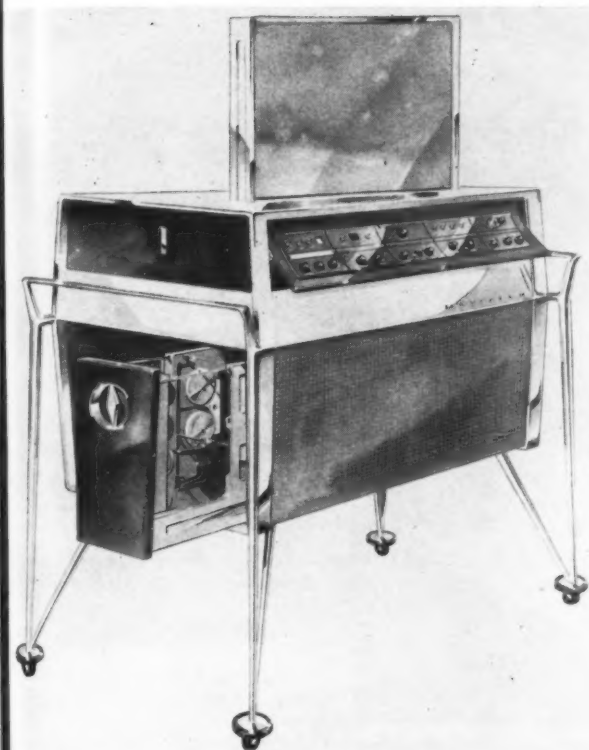
The storage unit at the right provides both dry and refrigerated storage, with all shelves moving as "traveling ladders" that bring all stored items into easy reach at convenient height. Thus, doors are needed at only one level. Both walls are framed with aluminum extrusions and enclosed with formed aluminum sheet.

aluminum producer
uses wide-screen
color slide film,
portable projection units
and colorized literature
to suggest new areas
in appliance design



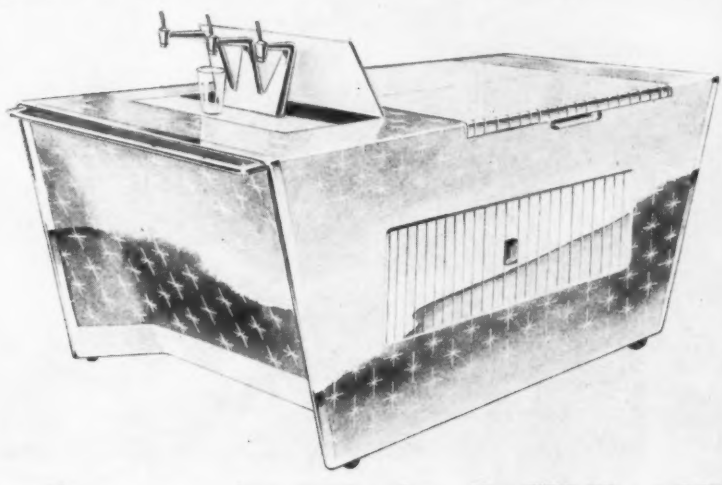
COFFEE MAKER . . . The luster of spun aluminum, polished and clear-anodized, is planned for this sleek coffee maker. The base and carrying ring are cast. Body can be removed from carrying ring for easy cleaning.





ENTERTAINMENT CENTER . . . The center contains AM-FM radio, record player, color and black-and-white TV, hi-fi stereo tape system for recording, playing, and storing both audio and video tapes. A clock timer permits recording any broadcast program. Wireless panel contains remote controls for all operations.

REFRESHMENT CENTER . . . With the textured-sheet lid open, a complete fountain raises into position. The unit combines water cooler, ice cube maker, ice cream and dessert freezer, chilling section for canned or bottled drinks, and a built-in multiple-speed blender.



through the dome-shaped roof is accomplished by use of telescoping panels of polarized glass. The "Pod" incorporates a factory-assembled utility core including preformed plumbing, hot water heater, and kitchen appliances and wiring circuits. Storage and laundry are

also integral parts and, in effect, the whole "Pod" unit "plugs in" to the utility sources at the site.

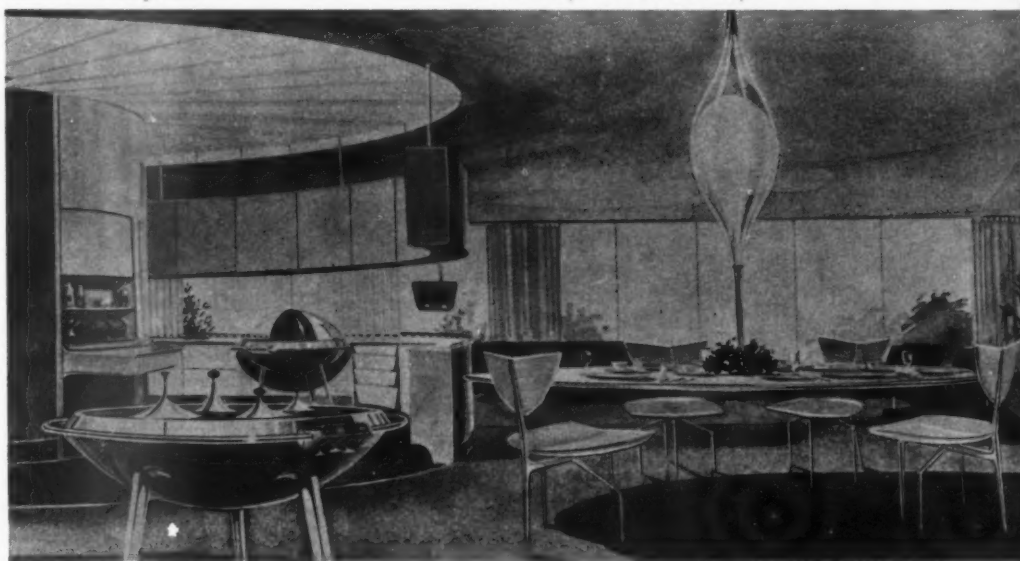
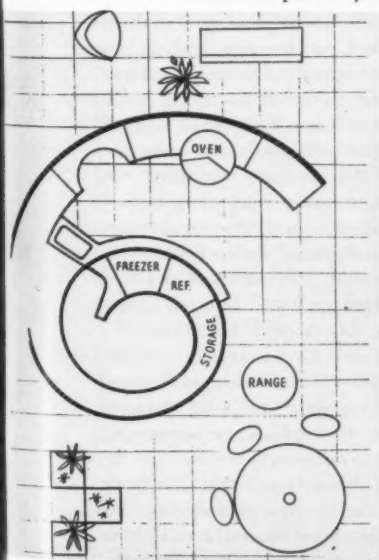
The "Modular" concept incorporates virtually all the kitchen equipment as well as utility core in a three-foot thick rectangular unit for which a 50-per cent

weight saving is indicated. For the modular house, this kitchen may be simply set in place in any exterior location. For a new home of more conventional design, the complete-wall "Modular" kitchen may be easily installed as

to Page 73 →

NAUTILUS . . . A central heating, air conditioning and filtering system supplies "climate control" for all living areas. Air moves through a duct system within the Nautilus' curved walls, with grilles located along the base areas of the walls. Aluminum coils heat and cool air, electrostatically charged aluminum plates "filter out" dust and pollen.

Complete aluminum plumbing and laundry appliances are located to serve both kitchen and bath, with an aluminum hot water heater as an integral part of the system. (See plan diagram) Aluminum-wired lighting and appliance circuits are included in the package core. Interlocking vertical extrusions form the wall itself.





Now in production, the Sunbeam Dual DeLuxe vacuum cleaner is designed to perform an equally good job of "on the floor" cleaning, as well as "above the floor" cleaning. Under research and development for more than two years, the new Sunbeam includes power for deep-down rug cleaning. The powerful motor unit and cleaner are less than eight inches high. The appliance has a 1½-hp motor. Available at extra cost is the Turbine Brush, which converts the cleaner into a powered-brush upright cleaner. An air clutch instantly stops turbine action when the handle is put in storage position. A timing belt-drive turns the brush at 1800 rpm.

The Sunbeam "Dual DeLuxe" vacuum cleaner

A NEW VACUUM CLEANER with newly-developed product features, including an optional turbine brush, is currently being produced by Sunbeam Corp., Chicago. The new appliance, designated "Dual DeLuxe," has been

Matt Hegerich, product manager of the Sunbeam Vacuum Cleaner division, describes selling features to Sunbeam President Robert P. Gwinn (center), and Clifford C. Mendler (right), vice president and general sales manager of the firm's Electrical Appliance division.



under development for several years. It is designed to provide two equally effective units, for floor surfaces and for furniture and curtains, with greater mobility and lightness, according to Robert P. Gwinn, Sunbeam president.

The vacuum cleaners were placed in production "when we were convinced that our new product design offered a product for homes with functional values not now available in any one of the units being made," the official said.

The new cleaner has a number of product features highlighted by a turbine driven brush. Other innovations include a step-on switch plate; vinyl-covered nylon suction hose; large wheels to add mobility and ease of movement; heavy duty 1.5 hp motor; a fan of new design for increased efficiency; finger-type release with 423-cubic inch capacity disposable paper dust bags; chrome-plated high tensile strength wands with snap-locks; crevice tools with angled ends; a dusting brush designed in triangular shape for reaching corners; and a feature enabling the unit to stand on end for stair carpet cleaning and easy storage.

Matt Hegerich, manager, Vacuum Cleaner division, reports that the Sun-

beam cleaners will retail at prices competitive with present quality makes, and "bring many features that will create sales because they obsolete present older models." The first assignment of our engineers was to create a product that would do a thorough job both on floor covering and for furniture and drapes, he said. "In doing this, they have given us a beautiful eye-pleasing combination, finished in browns and beiges, that will attract attention in any store."

The official said that the machine had many features that reflect "most wanted" characteristics reported in consumer surveys. These include mobility and light weight for easy operation, ease of storage, and design that permits convenient operation on stairways.

The vacuum cleaner and turbine brush will be packaged separately and the turbine brush will be offered by dealers as an optional accessory. Sunbeam engineers have redesigned all of the accessory group, including the tools for crevices, the upholstery brush and the dusting brush.

President Gwinn said that Sunbeam is entering the vacuum cleaner field because "while more than three million homes purchase these items annually,



(Left to right) — Paul J. Musolf, manufacturing vice president, Robert P. Gwinn, president, and J. J. Dahm, senior vice president, inspect complete pack-up of cleaner with turbine brush assembly.

(Fig. 1) — Here is a convenient on-off switch. Just step on switch plate on top of cleaner to turn on or off. Wide-track wheel design prevents tipping or tilting.

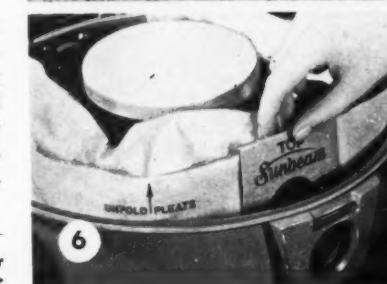
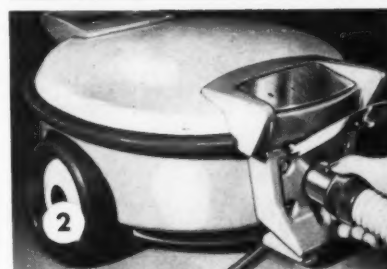
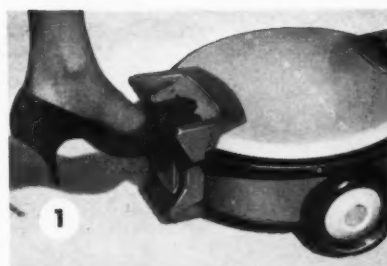
(Fig. 2) — The cleaner may be used as a blower by inserting hose in opening under step-on switch. Extra power is provided for de-mothing, spraying, and all blower operations.

(Fig. 3) — The cleaner stands upright to make stair cleaning easier. It has slim design and comfortable handle.

(Fig. 4) — Top of cleaner is opened to change disposable bags by depressing name plate within the handle. Cleaner is hinged for convenient operation.

(Fig. 5) — Instructions say to push red finger tip on-off switch when using cleaner in upright position as illustrated.

(Fig. 6) — Large capacity paper bag can be removed by pushing cardboard support towards center and lifting out.



TURBINE-DRIVEN BRUSH HIGHLIGHTS FEATURES

no major improvements have been developed since the mid-1940's when the canister-type cleaner gained popularity." He said that Sunbeam, as the electric industry's largest producer of portable appliances, each year introduced one or more new appliances "to meet a basic human need," or to offer an improvement where an appliance market had already been established. In this pattern Sunbeam introduced food mixers, electric fry-pans and automatic coffee makers to create markets, while in other years it has produced electric steam irons, bed coverings, and electric clocks for established markets. Electric clocks were introduced a year ago, and the company reports that current industry surveys show that Sunbeam's clock line has reached second position in sales among the eight leading brands.

"In 1958, a recession year, about 300 million dollars were spent for vacuum cleaners by American homes," said C. Clifford Mender, vice president and general sales manager, adding, "our surveys showed that a large percentage of these were replacement purchases by homemakers who had previously owned a cleaner. Our experience has been that homemakers seek higher

quality, when replacing an appliance that has worn out, than they do on an original purchase. For that reason, we have designed our cleaner so that it literally supplies two-cleaners-in-one. We believe that the added features will increase its attractiveness among better dealers, even though it will be among the higher priced models."

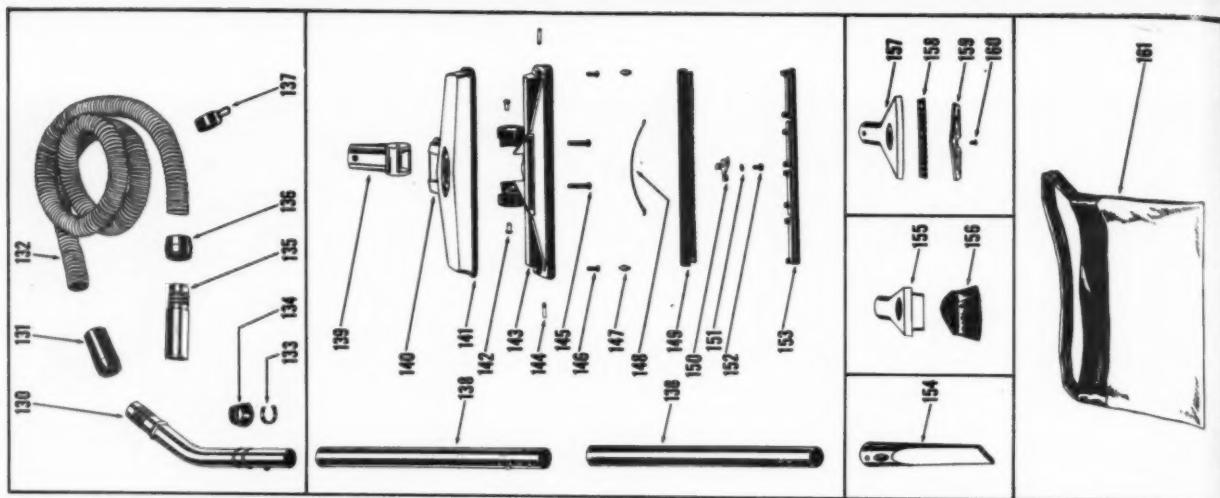
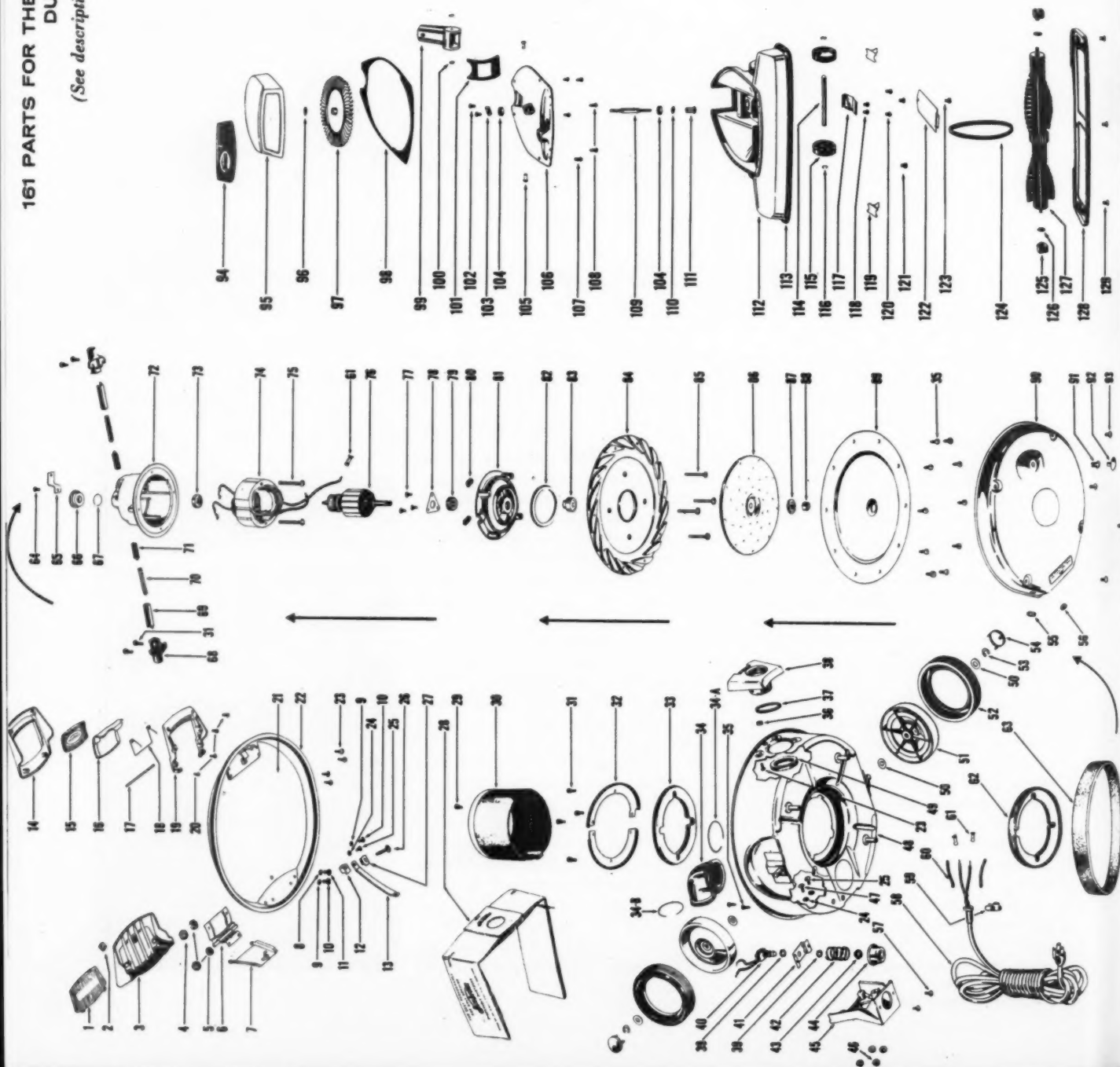
"We have devoted several years to development work aimed at a completely new functional approach," Hegerich stated. "We know that carpeting today comes in a greatly-increased variety of thicknesses. This fact means that a more powerful motor is required. We know that stair-carpeting is practically standard in homes, yet few existing cleaners are designed to function on stairways."

When production permits national dealer selling, the cleaners will be introduced by a million dollar advertising campaign in newspapers, magazines, and television, Hegerich said. The company expects that full national dealer distribution will be accomplished by November 1.

See sketches and listing of 161 parts for new Dual Deluxe on following page... →

161 PARTS FOR THE NEW SUNBEAM DUAL DELUXE VACUUM CLEANER

(See descriptive story on preceding pages.)



A look at the foreign market for household refrigerators

THE FIRST of a series of market surveys of household refrigerators in selected foreign countries has been released by the U. S. Dept. of Commerce. This report was prepared by John V. McCarthy, of the Consumer Durable Goods Division, and George O. Barraclough, Foreign Service Officer, State Department, assigned to the Division.

This first series is based on reports from the U. S. Embassies in six Common Market countries — France, Italy, Federal Republic of Germany, and the Benelux Nations — The Netherlands, Belgium and Luxembourg.

As might be expected, the saturation of the market is very low compared with the United States, and there are, at the present time, very few manufacturers of household refrigerators in most of these countries. For example, in The Netherlands there is only one small manufacturer. There are only three assemblers of refrigerators in Belgium and one manufacturer in Luxembourg. France, Germany and Italy have more manufacturers. For example, France has 42 firms, but there are, in the overall picture, still comparatively few manufacturers, producing a rather limited quantity.

Market is growing

There is, however, an increasing market for refrigerators in these countries. Production and sales have increased substantially since 1950. Production of household refrigerators in the Federal Republic of Germany increased almost 700 per cent between 1950 and 1957. In general the importation of household refrigerators from the United States has either declined or is facing increased handicap. There are three basic causes for this. Number one is the higher price of the refrigerators produced in the United States because of higher cost of labor and materials. Number two is the increased cost over and above this because of import duty. Number three is that the demand for refrigerators in these countries is generally for smaller sized units than those produced in the United States.

Move to Europe?

At this point, it appears that the only satisfactory solution for United States manufacturers of household refrigerators is to take steps to set up manufacturing operations in these foreign countries.

Here are some quotations from the survey reports as to the outlook in these various countries.

The Netherlands — "Opportunities exist for American concerns to establish one or more factories in the Netherlands in conjunction with Dutch firms

to manufacture American-type household refrigerators. American mass production methods and manufacturing experience are desired in the Netherlands. The potential market is large; market saturation low."

Italy — "The market outlook for household refrigerators in Italy is very encouraging for local manufacturers, with expansion of sales predicted. Imported American refrigerators cannot compete in price with locally-produced units. Additionally their sizes are too large, according to current Italian standards. The market for imported American refrigerators is, consequently, disappearing. Most of the well-known U. S. makes are being produced in Italy under license or by subsidiary corporations. U. S. firms represented in the Italian market are planning to fabricate all components locally."

Belgium — "U. S. exports of household refrigerators to Belgium in 1957, although showing a moderate increase over the previous year, were little more than half of the 1950 level. Imports from the United States in 1950, valued at \$2.8 million, represented 78 percent of total imports. By 1957, the U. S. share of the import market had dropped to 20 percent. The principal reasons were competition from Germany, which has taken first place in the market with low-priced models, and the fact that U. S. manufacturers do not produce small refrigerators preferred by Belgians."

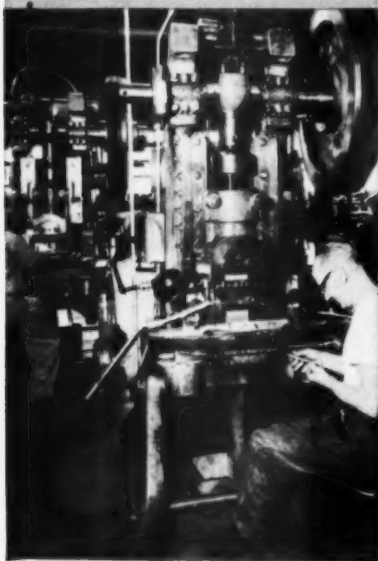
France — "Import restrictions covering refrigerators and sub-assemblies from the Common Market countries have not been liberalized except for refrigerators of the compression type, nor has liberalization been extended to import restrictions for refrigerators from the U. S."

Luxembourg — "As a result of the establishment of the Common Market, imported refrigerators are expected to be supplied by Common Market countries. Unless United States exporters work through subsidiaries or licensees located in the Common Market area, it is possible that exports from the United States may be adversely affected. Luxembourg is interested in attracting foreign capital to strengthen existing enterprises and establish new firms. However, the market for refrigerators in Luxembourg is limited and strong competition may be expected from West Germany and other Common Market low cost labor countries."

West Germany — "Demand for household refrigerators with compressor units is expected to expand. Absorption type refrigerators reportedly will continue to be less popular."

KEY NO.	DESCRIPTION	KEY NO.	DESCRIPTION
1	Switch Embossment	143	Nozzle Shoe (2 Used on Air Turbine Brush)
2	Top Stand Assembly (Includes Key Nos. 1 and 2)	144	Roller Shaft (2 Used)
3	Net	145	Screw (2 Used)
4	Net (3 Used)	146	Screw (2 Used)
5	Hinge	147	Roller (2 Used)
6	Base Stand Baffle	148	Brush Spring (Nozzle)
7	Washer	149	Brush Shoe Brush
8	Washer (3 Used)	150	Brush Lock Plate
9	Washer (3 Used)	151	Spine Washer
10	Screw	152	Screw
11	Screw	153	Spine Washer
12	Cover Strap	154	Cover Strap
13	Cover Strap	155	Dust Brush Assembly (Includes Key Nos. 155 and 156)
14	Handle Trim	156	Dust Brush Housing
15	Cover Latch Embossment	157	Upholstery Tool Assembly (Includes Key Nos. 157 through 160)
16	Cover Latch (Includes Key 15)	158	Upholstery Tool Housing
17	Latch Pin	159	Upholstery Shoe
18	Latch Spring	160	Screw
19	Handle Cover	161	Tool Bag
20	Screw (4 Used)		
21	Cover Gasket		
22	Cover Gasket		
23	Screw (8 Used)		
24	Washer (7 Used)		
25	Screw (3 Used)		
26	Screw Strap Washer		
27	Dust Bar (package of four)		
28	Screw		
29	Filler		
30	Motor Support Ring (2 Used)		
31	Motor Support Ring (2 Used)		
32	Motor Support Ring (2 Used)		
33	Top Motor Support		
34	Exhaust Elbow		
35	Outlet Elbow Ring		
36	Outlet Elbow Ring		
37	Inlet Stud Gasket		
38	Inlet Gasket		
39	Inlet		
40	Switch (Includes Key 39)		
41	Switch Bracket		
42	Switch Button Spring		
43	Inner Switch Button		
44	Outer Switch Button		
45	Base Stand		
46	Nut (4 Used)		
47	Screw (4 Used)		
48	Base Shell		
49	Dust Bag Gasket		
50	Washer (4 Used)		
51	Wheel (2 Used)		
52	Wheel Ring (2 Used)		
53	Roller Ring (2 Used)		
54	Wheel Plus (2 Used)		
55	Grommet		
56	Grommet		
57	Screw (2 Used)		
58	Cord		
59	Cord Block		
60	Sleeve (3 Used)		
61	Connector (3 Used)		
62	Lower Motor Support		
63	Muffler		
64	Filter Cover Bracket		
65	Filter Cover Bracket		
66	Cap Plug		
67	Base Lock Spring		
68	Brush Holder (2 Used)		
69	Brush Holder Sleeve (2 Used)		
70	Brush Spring (2 Used)		
71	Motor Brush (2 Used)		
72	Motor Housing		
73	Ball Bearing		
74	Field		
75	Screw (3 Used)		
76	Automatic Bearing (Includes Key 73)		
77	Screw (3 Used)		
78	Bearing Cover		
79	Grommet (2 Used)		
80	Grommet (2 Used)		
81	Boiling Support		
82	Boiling Support		
83	Fan Hub		
84	Diffuser Gasket		
85	Diffuser		
86	Fan		
87	Fan Washer		
88	Fan Nut		
89	Diffuser Cover		
90	Base Shell Pan (Includes Key Nos. 91 and 92)		
91	Clip		
92	Slid Button		
93	Screw (4 Used)		
94	Nutplate		
95	Retaining Key (Includes Key No. 94)		
96	Speed Nut		
97	Turbine Wheel		
98	Seal		
99	Swivel (also used on Reg Nozzle Attachment)		
100	Washer (2 Used)		
101	Screw (2 Used)		
102	Retainer Plate		
103	Retainer Plate		
104	Ball Bearing (2 Used)		
105	Pivot Pin (2 Used) (also 2 Used on Nut Nozzle Attachment)		
106	Nozzle Plate		
107	Screw (4 Used)		
108	Screw (3 Used)		
109	Turbine Shaft		
110	Pulley Back Plate		
111	Driver Pulley		
112	Base (Includes Key No. 113)		
113	Bumper Strip (to attach to 14-1465 Screw and 14-1463 Nut)		
114	Rear Wheel Shaft (Includes Key Nos. 114 through 115)		
115	Retaining Ring (2 Used)		
116	Rear Wheel Spring (2 Used)		
117	Rear Wheel Spring (2 Used)		
118	Screw (2 Used)		
119	Spring (2 Used)		
120	Screw (2 Used)		
121	Screw (2 Used)		
122	Timing Belt		
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**You hear the
sizzle, but
YOU EAT THE
STEAK!**



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SPring 7-3600

METAL PRODUCTS STATISTICS

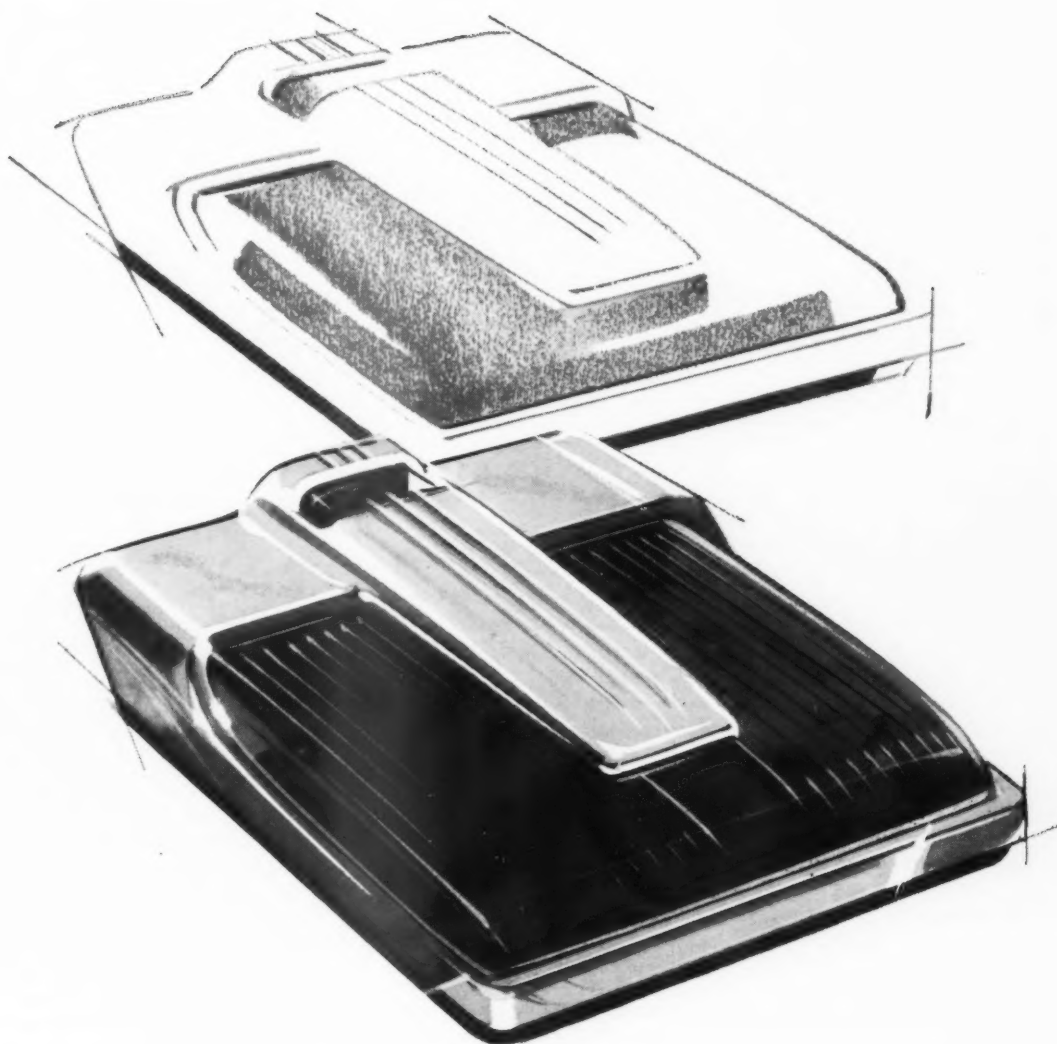
	1959 (Units)	1958 (Units)	% Change
Gas Furnaces-Warm Air.....July	96,900	69,100	+40.2
Jan.-July	530,900	389,400	+36.3
Gas Boilers.....July	14,700	11,500	+27.8
Jan.-July	64,900	52,600	+23.4
Gas Conversion Burners.....July	19,300	11,900	+62.2
Jan.-July	64,000	60,800	+ 5.3
Oil Fired Central Heating Equip.....July	49,299	42,624	+15.7
Jan.-July	298,573	260,119	+14.8
Gas Ranges, Free Standing.....July	114,300	113,400	+ 0.8
Jan.-July	927,300	879,600	+ 5.4
Gas Ranges, Built-In.....July	140,700	129,300	+ 8.8
Jan.-July	1,114,000	992,300	+12.3
Gas Water Heaters.....July	238,500	221,400	+ 7.7
Jan.-July	1,780,100	1,557,600	+14.3
Gas Vented Recessed Wall Heaters.....July	39,800	31,700	+25.6
Jan.-July	233,600	183,500	+27.3
Gas Floor Furnaces.....July	7,600	6,700	+13.4
Jan.-July	44,600	39,300	+13.5
Gas Direct Heating Equip.....July	139,500	131,500	+ 6.1
Jan.-July	575,300	527,600	+ 9.0
Gas Unit Heaters & Duct Furnaces.....July	9,500	6,800	+39.7
Jan.-July	75,800	65,100	+16.4
Gas Incinerators.....July	4,300	3,500	+22.9
Jan.-July	24,100	26,300	- 8.4
Electric Household Refrigerators.....July	370,800	279,700	+32.6
Jan.-July	2,237,100	1,764,700	+26.8
Electric Farm & Home Freezers.....July	124,600	119,700	+ 4.2
Jan.-July	777,600	613,300	+26.8
Electric Ranges, Free Standing.....July	67,100	57,500	+16.7
Jan.-July	562,700	457,500	+22.9
Electric Ranges, Built-In.....July	62,100	41,000	+51.5
Jan.-July	415,400	285,000	+45.8
Electric Storage Water Heaters.....July	66,200	79,000	-16.2
Jan.-July	498,600	476,500	+ 4.7
Electric Dishwashers.....July	36,500	33,100	+10.3
Jan.-July	291,200	217,200	+34.8
Electric Food Waste Disposers.....July	61,400	49,100	+25.1
Jan.-July	411,800	331,800	+24.1
Combination Washer-Dryers.....July	9,665	7,829	+23.0
Jan.-July	96,914	72,680	+33.0
Washers, Automatic & Semi.....July	251,300	212,208	+18.0
Jan.-July	1,621,539	1,392,225	+16.0
Washers, Wringer & All Other.....July	66,763	65,079	+ 3.0
Jan.-July	506,709	462,655	+10.0
Electric Dryers.....July	66,791	54,557	+22.0
Jan.-July	406,601	326,333	+25.0
Gas Dryers.....July	28,457	20,956	+36.0
Jan.-July	196,068	135,725	+44.0
Vacuum Cleaners.....July	221,232	263,778	-16.1
Jan.-July	1,932,422	1,765,502	+ 9.5
Metal Furniture.....July	*	*	+10.0
Jan.-July	*	*	+ 7.0
Television.....July	350,360	274,999	+27.4
Jan.-July	3,133,075	2,442,929	+28.3
Radio (1).....July	829,035	592,972	+39.8
Jan.-July	7,936,621	5,212,135	+52.3
Compressor Bodies (2).....May	478,445	*	*
Jan.-May	2,302,346	*	*
Compressor Bodies, Automotive.....May	57,148	*	*
Jan.-May	279,539	*	*
Steel Barrels & Drums.....June	3,841,526	2,665,131	+44.1
Jan.-June	18,437,428	15,369,023	+19.9
Steel Pails.....June	9,162,686	6,755,191	+35.6
Jan.-June	42,228,816	35,124,774	+20.2
Typewriters.....July	109,593	*	*
Jan.-July	679,635	*	*

(1) Including auto receivers

(2) Excluding units for household refrigerators & including exports

* Not reported

Sources for this information: Gas Appliance Manufacturers Association, National Electrical Manufacturers Association, American Home Laundry Manufacturers Association, Vacuum Cleaner Manufacturers Association, National Association of Furniture Manufacturers, Electronic Industries Association, Air-Conditioning and Refrigeration Institute, and U.S. Dept. of Commerce.



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The future for plural component or "catalyst" resins

a discussion of the use of epoxies and polyurethane expandable foams for coatings, insulation

by William Brooks



The finish that is applied to a manufactured product is one of the most important parts of that product. It is the finish that the ultimate consumer, the customer, sees first; and first impressions are very important. A good finish certainly helps to sell a product, but equally important is the life of that finish — how long it keeps that product looking like new.

Chemical coating manufacturers have always sought the ultimate in coatings for their customers and, naturally, manufacturers want the best finish they can get. The introduction of alkyds many years ago was a tremendous step in the direction of perfection. Amine resins then helped to improve the hardness and color fastness of the alkyds.

Back in the late forty's a new resin, epoxy, was announced, and this announcement brought mixed comments from the coating industry. Here was a coating that baked on a surface, but instead of using an oven, an amine catalyst was used to cure the coating, giving properties of baked finish. You mixed the two materials together and the chemical reaction generated the cure. This chemically-accelerated coating cure and the protective qualities of

this resin opened new horizons in the expansion of the chemical coating industry.

Epoxy resins are used quite extensively today in their ester or oil-modified form where no catalyst is required. Many appliance and metal product manufacturers use epoxy-modified coatings to obtain the moisture and alkali resistance offered.

No solvents or drying oils

The ultimate in protection offered by an epoxy coating is obtained when that resin is used in a 100 per cent non-volatile form — no solvents — no drying oils. The use of this resin in a production finishing system with the ease and flexibility of present day amine-alkyd coatings is not now at hand, but much work has already been done in this direction and its final completion now appears to be close. The

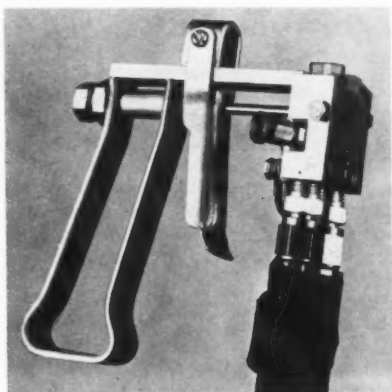
The new type gun shown above in use was designed primarily for the application of polyester resins where the accelerator mixture must be brought into contact with the catalyst mixture immediately before the mixture impacts the work surface. It can also be put to other uses where perfect mixing is not required, such as spattering or veiling where two different materials can be sprayed with each pass of the gun.

original formulations of this coating called for 100 parts by weight of resin to three parts accelerator-catalyst. If the proportion varied, the resultant finish suffered. Present day formulas call for 4, 3, 2, or 1½-to-1 ratios which have a bit more flexibility in proportioning without destroying the ultimate coating protection. This type of system is called an adduct system and probably further formula work will again bring greater flexibility in handling.

To spray-apply these resins in their present form poses additional problems. If the material is premixed, the "pot life" is so short that equipment plugging is a certainty. Also, the high viscosity at room temperature makes them prac-

PHOTOS COURTESY BINKS MFG. CO.





Gun used in connection with the proportioning machine is designed to spray two component resin systems. It is used with epoxies, polyesters, polyurethanes, etc. (Right) — This proportioning machine automatically supplies a gun with heat-controlled resinous components at proper pressure and predetermined proportion.



PHOTOS COURTESY A. GUSMER, INC.

tically impossible to atomize. To apply heat after mixing, to reduce viscosity, is out of the question, as heat very rapidly accelerates the cure. So to spray-apply 100 per cent solids, non-volatile epoxies, a special spray system must be used, in which the two materials are proportioned, heated and fed to a special spray gun which will intimately mix and spray the coating.

The fluidized bed process

There is a process available today whereby pre-catalyzed 100 per cent solids, non-volatile epoxy can be applied to a metal product in a powder form. This process, called the "fluidized bed" process, provides coatings of 6 to 20 mils thickness over the entire metal surface, including edges and projections. Basically, the process works in this manner: A metal product to be coated is placed in an oven and heated to 300° to 450° F, is then immersed in a dry powder bed of prepared resin which has an air flow passing through it from the bottom so as to float each particle, the powder sticks to the product's heated surface, melts, and then flows out to an even coating. The mil thickness can be controlled by immersion time and/or by additional immersing. Further curing is then accomplished in an oven.

Now what is so good about an epoxy coating that makes it advantageous to be used where the ultimate in resistance is required. Without going into a lot of chemical jargon, the answer lies in continuity and structure of the mole-

cules. It can be likened to two different mesh screens. A good oil-modified, solvent-based coating would be the 60-mesh screen — only filtering out part of the ultra-violet rays, moisture, or anything that would attack the film, whereas the epoxy would be a 200-mesh screen, meaning the molecules are tied closer together with no loose ends and thereby better able to keep out the destroying elements. For this reason, epoxies have been used extensively in the Gulf Coast area, where corrosion is the number one enemy.

Other relatively-new materials that offer tremendous potential in the manufacturing field are urethane cellular plastics or expandable foam resins.

Foamed-in-place materials

The generation of cellular plastics by chemical conversion of various urethane cross-linked resins is already used in large volume in the foam seating and

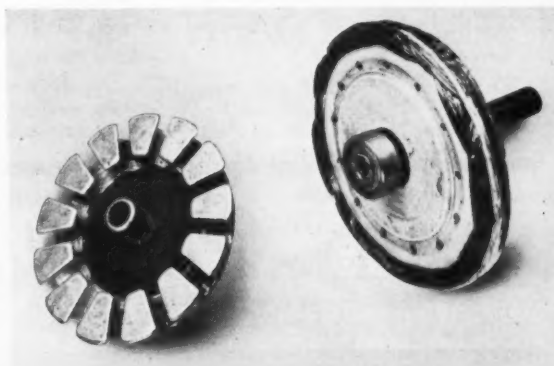
padding industry. In this case, the foam has been of the more flexible poly ether type. By proper formulation, any type foam can be produced, from rigid to semi-rigid, to any degree of flexibility. Also by formulation the weight per cubic foot is controlled. For seating and cushioning products the shape desired is usually cut from huge pre-foamed slabs.

A later development, polyester foam, is now in use, and is said to offer greater shrinkage resistance and added fire protection. The future of these resins will come when they can be foamed-in-place. A practical application system will make possible the placing of foam in a liquid form, which will immediately expand, in areas not considered economically or mechanically possible before. In this case it will be handled exactly as the epoxies, using special application equipment for metering, heating, and mixing.

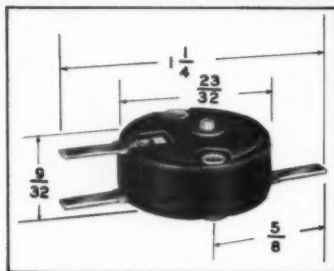
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PHOTO COURTESY
NATIONAL POLYMER PRODUCTS, INC.

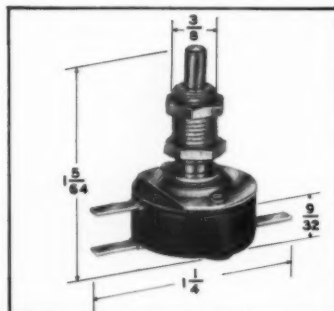
New method of insulating pancake armature results from coating with epoxy resins in the fluidized bed process. Single-dip procedure replaces seven-step process utilizing fishpaper and varnish.



NOW...ACRO ADDS A SUBMINIATURE SWITCH TO THE BASIC AND PUSH-BUTTON APPLIANCE SWITCHES!



Model "Q" switch (Catalog number QD2000) is shown

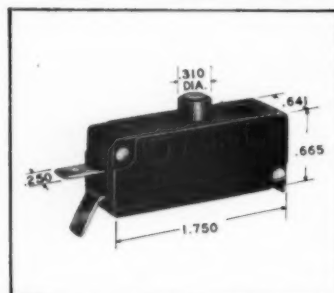


Acro's Dime Sized Model "Q" gives a Dollar's Worth of Performance

Here's a real space saver that carries a man-sized load. Acro's Model "Q" switch actually carries a 10 amp load, and has a long mechanical life—in excess of 10 million actuations! It is shock-resistant and operates under light operating pressure. This is a true Acro quality precision snap-acting switch. Solder terminals available at no extra cost. Underwriters Laboratory approved for 125 or 250 V.A.C.

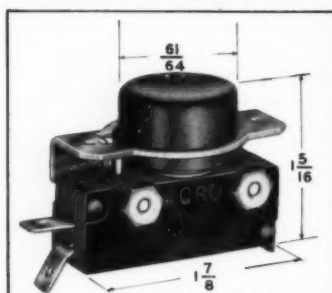
Model "Q" Switch. (Catalog number QPD 2000). This is the same basic switch as the "QD" 2000 and is designed for panel mounting. .125 of built-in overtravel. Available in either 3/8" or 1/4" thread sizes. Solder terminals available at no extra cost. Also U. L. approved, for 125 or 250 V.A.C.

ACRO'S APPLIANCE SWITCHES FEATURE LONG MECHANICAL LIFE



Basic Appliance Switch (Catalog Number 276-0001-00). These models are ideally suited for appliances and vending machines. They have quick disconnect terminals to cut assembly time. They're available with pin plunger, overtravel and panel mount plunger; leaf and roller leaf actuators. U.L. approved for 15 amperes, 125-250 V.A.C., 1/2 H.P. 125 V.A.C., 1 H.P. 250 V.A.C.

We are now producing appliance switches for the leading vending machine and appliance manufacturers. Just send in your specific problem, and we'll put our engineers to work on it. No obligation of course.



Push Button Appliance Switch (Catalog number 276-0701-00). Designed for panel mounting, actuator frame pre-tapped for easy mounting. Red pushbutton is standard. Buttons may also be hot-stamped with letters or words of your own selection. U.L. approved for 15 amperes, 125-250 V.A.C., 1/2 H.P.; 125 V.A.C., 1 H.P. 250 V.A.C.



"OUR 20th YEAR"

ACRO DIVISION
Robertshaw

COLUMBUS 16, OHIO



Editor's mail

→ from Page 22

The other day I received information that some of the larger architectural porcelain enameling manufacturers plan to discontinue making panels next year and that some manufacturers are in real financial trouble. I do not believe the steel companies have been of any help to the architectural porcelain enameling people in connection with their product. This I believe can be emphasized by the fine job aluminum companies are doing with their product. In fact, our salesmen at Porcelain Engineering are having a difficult time in convincing some of the larger architectural firms that steel is superior to aluminum for having porcelain enamel applied. This condition exists due to the fine job aluminum companies have done in placing their ads in various trade magazines and on TV.

I hope in sending this letter to you that possibly one of your fine editorials* can stir up the parties concerned, or at least start discussion on this subject.

I hope it isn't too late.

Wm. E. Martin, Executive Vice President
Doral Enamel Products, Inc.
Chicago, Ill.

*This letter would seem to speak for itself, without editorial comment.

The Editors

Mr. Calvert moves

Gentlemen: For quite some years I have been receiving FINISH and its successor, METAL PRODUCTS MANUFACTURING, which I have always found interesting and of considerable value.

Inasmuch as I am moving my headquarters, I would appreciate it if you would change the stencil, from the sample enclosed, to me at Pfaudler Permutit, Inc., 1000 West Ave., Rochester 3, N. Y.

G. C. Calvert, Vice President
Pfaudler Permutit, Inc.
Elyria, Ohio

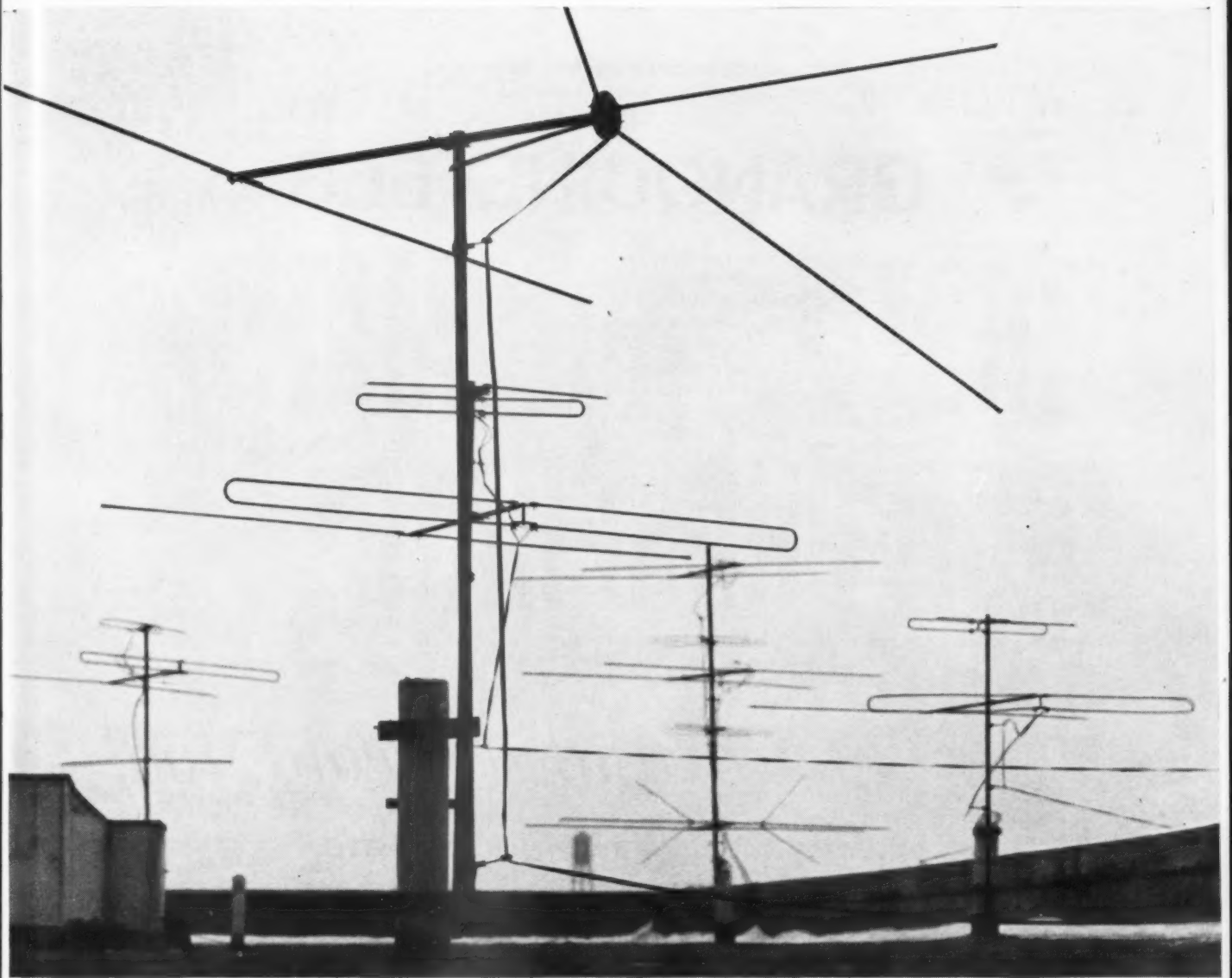
Gentlemen: Your June, 1959 issue of METAL PRODUCTS MANUFACTURING contained an article entitled, "New plant design for porcelain enamel on aluminum," Pages 44 and 45.

We are interested in obtaining a copy of this article. Would you please forward a reprint if available?

R. W. Boyd, Power Engineer
The United Illuminating Co.
New Haven, Conn.

My copy of your magazine is circulated to interested personnel in our organization. My periodic check of the use to which magazines of various types are put reveals a continued interest in your magazine among our people.

Wallace E. Wilson, General Manager
Rochester Products Div.
General Motors Corp.
Rochester, N. Y.



WHICH ONES WILL LAST (and last, and last!)? THOSE MADE OF WEIRKOTE® ZINC-COATED STEEL!

Steel tubing that's protected against corrosion even under the most trying circumstances.
Steel tubing that's easily fabricated to meet the most exacting specifications.

That's what you get in tubing made of Weirkote zinc-coated steel!

Weirkote's zinc coating—applied by the continuous process throughout, and so uniformly that every square inch is protected—is skin-tight. There's absolutely no flaking or peeling no matter how tortuous the crimping, twisting or other stresses of fabrication. In fact, Weirkote can be worked to the very limits of the steel itself.

The use of Weirkote can eliminate the need for any further coating process after fabrication. Its tight zinc coating is completely intact and remains so during fabrication and on the job. Weirkote zinc-coated steel tubing is particularly suited for jobs where weather is a factor to be taken into consideration.

Take a good long look at the possibilities and advantages of using Weirkote zinc-coated steel to meet your tubing requirements. For the complete story on Weirkote and how it can help you, write Weirton Steel Company, Dept. R-7, Weirton, West Virginia.



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PROCESS! *and it's "cold," too!*

NEWEST PRE-PAINT TREATMENT FOR STEEL

AUTOMATED GRANODINE 663—the industry's first—takes the human element out of quality control... replaces it with 100 percent electronic line control, every hour of every day! You get positive, electronic vigilance on the line that adds up to savings in time, labor and chemicals—yet overall coating uniformity and quality never varies!

COLD GRANODINE 663—the coldest yet—means on-the-line savings of 50 percent or more in heating dollars! Typical heat savings range from up to \$12,000.00 per year on large volume lines, to \$7,500.00 and \$5,000.00 yearly on intermediate and smaller spray lines when compared to the cost of typical hot processes.

Put your phosphate processing on a more productive basis with the first completely automated phosphating line in the metalworking industry. Write, wire or phone your local AMCHEM representative for further information on cost-saving, time-saving Granodine 663!



Write for Bulletin 1698 on Granodine 663—contains eye-opening quality control data that will interest your company's financial experts!



Automated

GRANODINE

another chemical development of

AMCHEM PRODUCTS, INC., Ambler 21, Pa.
(Formerly American Chemical Paint Co.)

Detroit, Mich. • St. Joseph, Mo. • Niles, Calif. • Windsor, Ont. • Amchem and Granodine are registered trade marks of AMCHEM PRODUCTS, INC.

Check these Automated GRANODINE 663 Features...

- ✓ Automated—for round-the-clock quality and bath stability!
- ✓ Cold—for substantial heat savings!
- ✓ Lowest coating weight consistent with top quality!
- ✓ Powder-free coatings, continuous and adherent!
- ✓ Sludge-free bath!
- ✓ No oxidizing accelerators required!
- ✓ Readily soluble powder form, cheaper to ship, easier to store!

...and call your
Amchem representative today!



Automated GRANODINE

another chemical development of
AMCHEM PRODUCTS, INC., Ambler, Pa.
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Granodine are registered trademarks of
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Plural component resins

→ from Page 35

The largest potential market for a foam-in-place system is in the insulating field. The insulating qualities of urethane foam with its Freon gas closed-cell structure is unsurpassed as an insulator by anything available today.

Applications include aluminum building panels, refrigerators, cold storage rooms and buildings, insulating trucks and railroad cars, airplanes, missiles, and many other products too numerous to mention. The buoyancy, strength, light weight and moisture resistance qualities of urethane foams make them natural for marine products. A boat whose bulkheads are filled with this foam is practically unsinkable.

A major problem in connection with the application of constantly changing new materials at production rates is one of equipment. The race is between the chemical formulators and the equip-

ment engineers, and the problem is not a simple one.

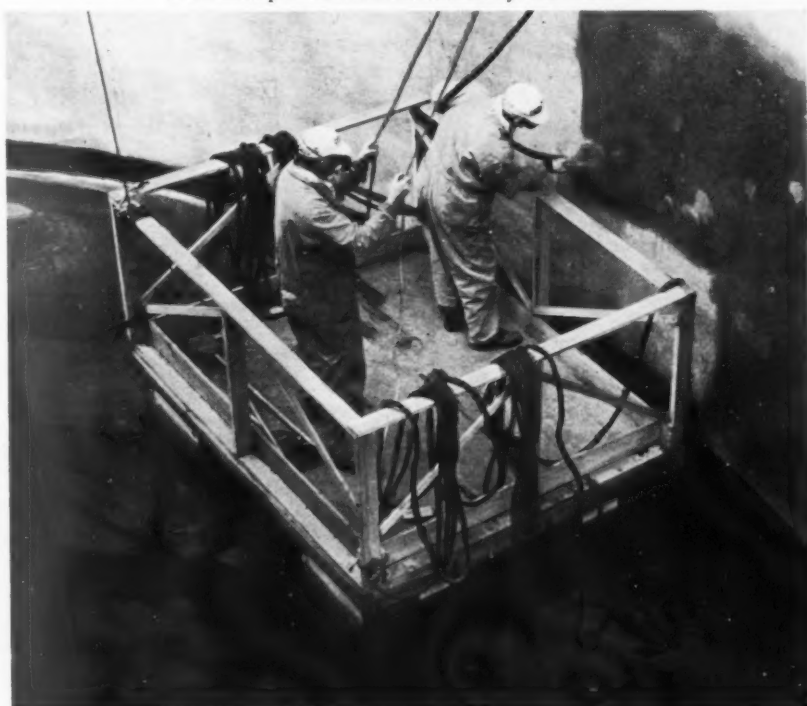
On the one hand, the formulators seem to have advanced faster than the equipment can be made available to utilize the new materials. On the other hand, the equipment producers have found that a setup that will work satisfactorily with one new material may fail to operate with another material or a variation in formula.

Close cooperation between the major formulators and the equipment manufacturers will therefore be extremely important if the rapidly growing list of new materials is to be made available to the end product manufacturer.

EDITORIAL NOTE: William Brooks was formerly with a major producer of paint finishing equipment and systems. He was director of a research laboratory and a paint finishing school. In this exclusive article, he offers his opinions on important developments in the chemical industry.

PHOTO COURTESY UNION CARBIDE PLASTICS CO.

Dual component gun and proportioning machine are used here for spraying the inside of a large steel tank with an epoxy-type coating. Film thicknesses of from 5 to 35 mils per coat are obtainable by this method.



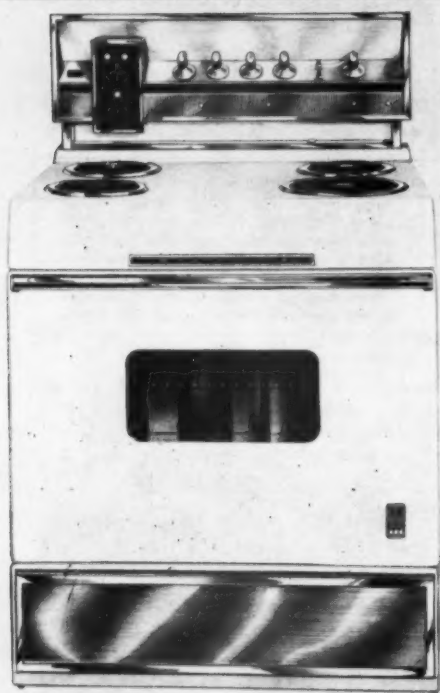
NHMA Show Set For Chicago

The National Housewares Manufacturers Assn.'s Chicago exhibit will be held at Navy Pier and adjacent Drill Hall for a full five days, beginning Jan. 11 and ending Jan. 15. Demand for exhibit space at the 32nd show is at a record level, NHMA reports.

Home Laundry Conference

"Home Laundry Meets the Challenge of the 60's" will be the theme of the 13th National Home Laundry Conference at New York City's Statler Hilton Hotel, Oct. 29 and 30. An all-out effort to encourage laundry teaching will be the major aim of the conference.

GENERAL STEEL WARES . . . another user of PERMA-VIEW® WINDOWS



A great majority of the leading manufacturers of ranges (both free-standing and built-in) now use PERMA-VIEW windows to enhance the appearance and convenience and economy of their products. During the past few years the demand for "visible baking" has continued to grow. This "No-Fog" window is the best and most economical answer to this demand.

The PERMA-VIEW window is pre-engineered and comes to you ready for immediate installation in your range, "out of our carton into your door." It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." Let our specialized production lines serve as a part of your sub-assembly facilities. If you do not use a window, if you make your own window, or if you buy your window from another source, we suggest you phone or write us for complete details on the ease and economy of adding this proven sales feature to your new ranges.



ROUND



SQUARE



RECTANGULAR



TRAPEZOID

We can manufacture any shape, any size, any thickness to meet your engineering requirements. Alternate methods of attachment may be used.

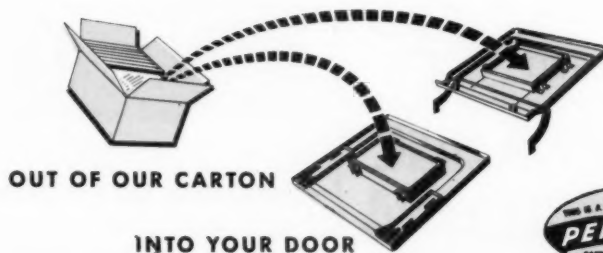
GENERAL STEEL WARES, LTD.

one of the

83 leading range manufacturers

using

PERMA-VIEW oven-door windows



MILLS PRODUCTS INCORPORATED

1015 WEST MAPLE ROAD

WALLED LAKE, MICHIGAN

*Inland "job-tailored"
Cold Rolled Sheets work better*

product: VACUUM CLEANER
TANK PART



problem:

produce a handsome vacuum cleaner tank of the upright type, designed in a silhouette for consumer eye appeal. The operation to be a single deep draw. Because of the depth of the draw and the severe shaping, a sizeable amount of breakage could result. The required draw also produced stretcher strains in the shaped tank which handicapped later finishing operations.



solution:

quality standards were met and the problem overcome by "job-tailored" Inland Cold Rolled, Drawing Quality, Aluminum Killed Steel. This steel, specifically recommended for the job, successfully took the deep draw and pattern formation required. Stretcher strains were eliminated and an excellent surface obtained for all subsequent finishing.

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*Cold
Rolled
Sheets*



The new Milford, Mass. headquarters plant of the Bettinger Corporation culminates a scheduled transition from a research and development-oriented

"ten-year plan" to automatic volume production of a broad range of ceramic-on-metal products. Bettinger also has plants in Rehoboth, Mass., Toledo, Ohio, and Canada, as well as licensee plants in Belgium, France, Germany, Italy, South America, and the Philippines.

As a result, the company had an unusual opportunity to move into a new facility designed and equipped for the production of a carefully selected range of ceramic-on-metal products.

The major considerations were: 1. Both layout and equipment should pro-

An all-new plant for ceramic coating

vide as nearly continuous process flow as possible, in contrast with the largely batch-type operations imposed by its previous hodgepodge of buildings and mixture of old and new equipment. 2. Since architectural panels and industrial siding would represent a high percentage of the production in the plant, furnaces, ovens, and material handling equipment should all be able to handle the large pieces required by current architectural design. 3. Facilities should be provided for the coating and firing of special high-temperature, corrosion-resistant parts for such applications as

The continuous dryer is seven feet high and maintains a drying temperature of 500° F. The conveyor serving the automatic spray and dryer is 125 feet long. This line is designed for processing high volume orders such as whiteware, signs, and ceramic-coated parts such as the moving stairway risers shown here. The inside measurements of this continuous furnace are: Height—seven feet; length—90 feet. It has eleven gas burners for a normal firing temperature of 1550° F. Its rated capacity is 30,000 square feet per shift, and is handling panels up to six feet by twelve feet.

new Bettinger plant has all-new equipment and uses latest materials and techniques for the application of porcelain enamels and ceramic coatings



This photo shows a section of the main service conveyor as it dips at the hand spray booth, passes brushing, screening, and storage departments, and feeds to the furnace chain.

jet engine exhausts, turbine blades, and other important components for military use.

The result is a \$1.5 million, 100,000-square foot plant completely adapted to Bettinger's product mix and process requirements. The layout revolves about the central coating and firing department, which occupies approximately 40 per cent of the manufacturing area. Around the periphery of the plant are all feeder operations, including receiving and shipping, metal fabrication, pickling, laboratory, and mill room.

Equipment for varied product mix

The equipment in the plant is new, much of it custom designed to meet process requirements. Automatic spray equipment, dryer, and furnace are all coordinated to handle up to 6' x 12' flat architectural panels. Three separate conveyor lines in the coating department

make it possible to use spray, dryer, and firing equipment either separately or together, depending on product mix and production schedules.

High temperature coatings and coatings on intricate shapes not suitable for the continuous furnace can be fired in the box-type furnace used for high temperature work.

Grouped around the major production equipment are the feeder processes and facilities. Metal fabrication is located at the rear of the plant, adjacent to the spur rail siding, and cut and formed parts flow directly to the pickling

Large pickling tanks are provided for processing sheets up to the maximum loading measurements of the furnaces. These tannery panels, six feet by twelve feet, are among the largest pieces processed.

and chemical treating facility to be prepared for coating. Other materials such as insulating cores for architectural panels and fabricated parts supplied by the customer for coating, flow from the siding to the south end of the plant for storage and processing.

The laboratory and mill room are located at the north end so that eventual plant expansion on the nine-acre site will leave them centrally located. The laboratory is equipped both to continue the research and development programs to which company executives attribute the company's growth, and to supply customer testing, quality control, and color matching services for the manufacturing departments.

Raw materials for coating are re-



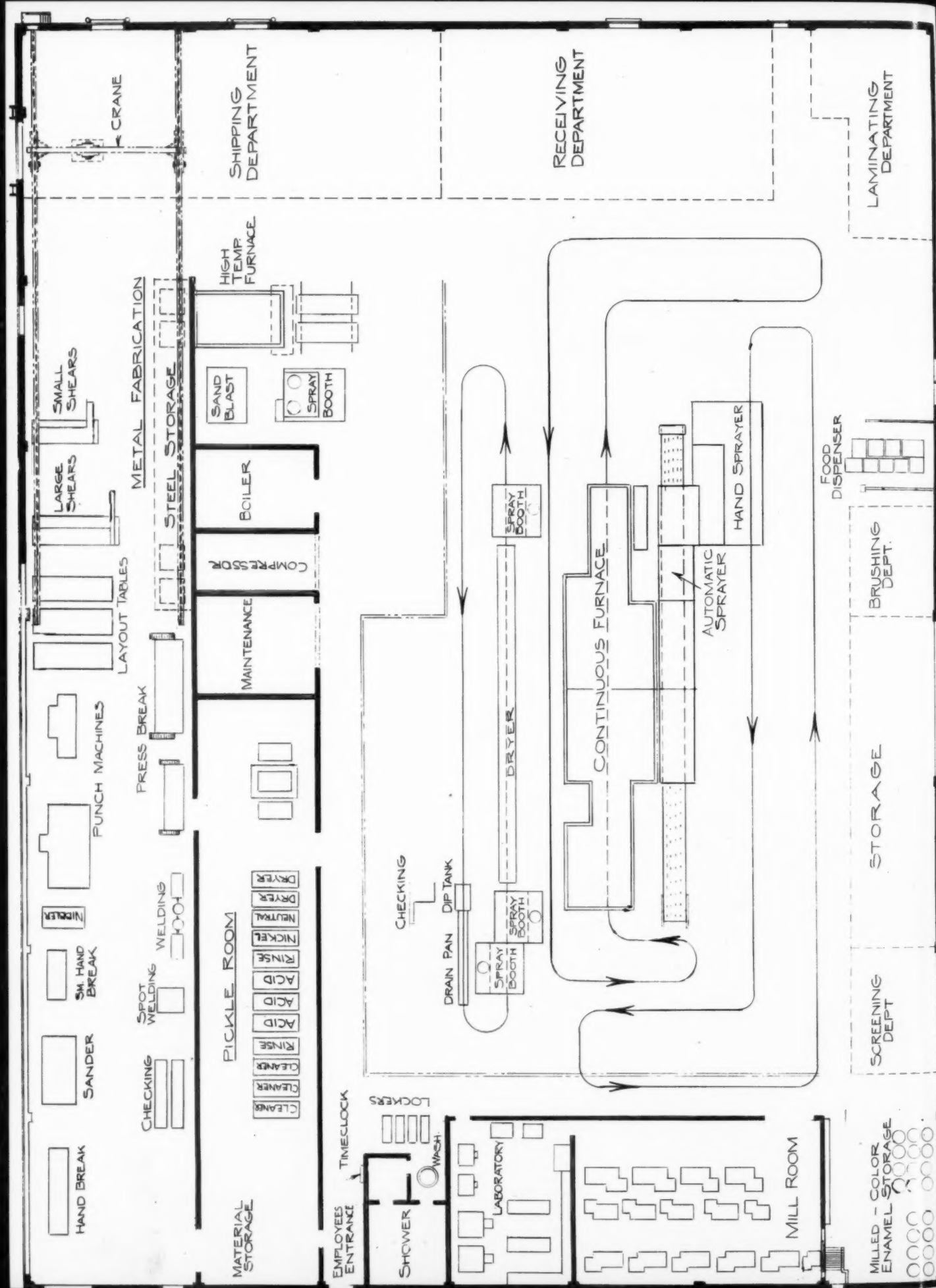
Robert A. Weaver, Jr., (left in photo) acquired an interest in the Bettinger Corp. in 1946 when it was a struggling and unprofitable contract plant for stove parts, signs, and related products. He was made president in 1947, and since then has guided the company to its present position.

As a champion of small business, Weaver served for six years as national vice chairman of the National Council of Consultants to the Small Business Administration, and was a member of the Small Business Advisory Committee to the Secretary of Commerce. As a former president of the Young Presidents Organization, he is active in local, regional, and national business organizations.

He is chairman of the board of Cerametal Industries Ltd., Streetsville, Ontario. His directorships include Worcester Pressed Steel Co., Penobscot Chemical Fibre Co., and Joseph Breck & Sons Corp.

Arthur D. Shaver, vice president and treasurer at Bettinger, was formerly comptroller of the International Division of Ferro Corp., Cleveland. He joined Bettinger in 1947. Shaver served in the Canadian Army during World War II, as did Weaver. He served as secretary of the Canadian Munitions Assignment Committee, at Canadian Military Headquarters in London, and later was director of Disposal of Surplus Army Equipment at the same headquarters. Prior to the war, he was in the Financial department of the Steel Co. of Canada, Hamilton, Ontario.





HAND BREAK

SANDER

SM. HAND BREAK

WIPER

PUNCH MACHINES

PRESS BREAK

SPOT WELDING

WELDING BOOTH

CHECKING

CLEANER

MATERIAL STORAGE

PICKLE ROOM

CLEANER
CLEANER
RINSE
ACID
ACID
RINSE
NICKEL
NEUTRAL
DRYER
DRYER

MAINTENANCE

COMPRESSOR

BOILER

SAND BLAST

SPRAY BOOTH

HIGH TEMP FURNACE

METAL FABRICATION

STEEL STORAGE

LAYOUT TABLES

LARGE SHEARS

SMALL SHEARS

CRANE

SHIPPING DEPARTMENT

RECEIVING DEPARTMENT

LAMINATING DEPARTMENT

FOOD DISPENSER

BRUSHING DEPT.

STORAGE

SCREENING DEPT.

MILLED - COLOR ENAMEL STORAGE

EMPLOYEES ENTRANCE

SHOWER

WASH

LOCKERS

TIMECLOCK

LABORATORY

MILL ROOM

CHECKING

DRAIN PAN DIP TANK

SPRAY BOOTH

SPRAY BOOTH

CONTINUOUS FURNACE

AUTOMATIC SPRAYER

HAND SPRAYER

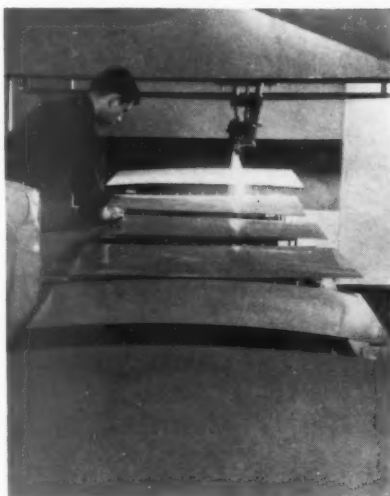


Unloading for this millroom takes place on the floor above, at grade level for truck delivery, so that frit and mill additions can be gravity fed directly to the ball mills.

ceived at a separate truck dock above the mill room so that they can be gravity-fed directly to ball mills, mixers, or storage drums without further handling. Access is provided from the mill room directly to the laboratory so that control of chemicals, oxides, refractory materials and other raw materials can be maintained to match specifications.

Fabrication includes large and small shears, layout tables, punch presses, hand brakes and press brakes, electronically-controlled spot welders, and arc welders.

Continuous furnace is seven feet high, 90 feet long, with 11 gas burners to provide a firing temperature of 1550° F. It has a capacity of 30,000 square feet per shift, and will handle panels up to six feet by twelve feet.



This automatic sprayer is five and a half feet wide and feeds directly into a continuous dryer. Shown here is a single gun spraying flat panels. The spray machine can be equipped with up to four guns for uniform coating of intricate shapes.

The pickling room has twelve tanks, each 13 feet long, 8 feet deep, and 5 feet wide. The tanks are serviced by an overhead crane, and the twelve-tank line gives the required variation in cleaning specifications for the wide variety of products to be coated. There is specially-designed materials handling equipment for the batch cleaning of small parts.

Frits used in the plant include high-opacity titanium whites, special frits for high acid resistance, refractory frits, and a wide range of special frits for specialized high temperature applications. To meet exacting quality control standards, frits, oxides, and mill addi-

tions are tested before mixing, and formulation is subject to a rigid control system. Because of the tight production control, the mill room seldom works more than three days to a week ahead of coating and firing.

Although the company uses many coatings based on the Bureau of Standards A-19 and A-418 series, the mill room works from Bettinger's own specifications, because many of the formulas have been developed to meet special requirements.

Plant production covers a wide range of products

Current production is concentrated on the following:

Curtain-wall panels and chalkboards—Bettinger was early in the development of architectural porcelain curtain-wall panels. The market for such panels has expanded steadily over the past five years, and the company's recent estimates indicate an annual market potential of \$300 million.

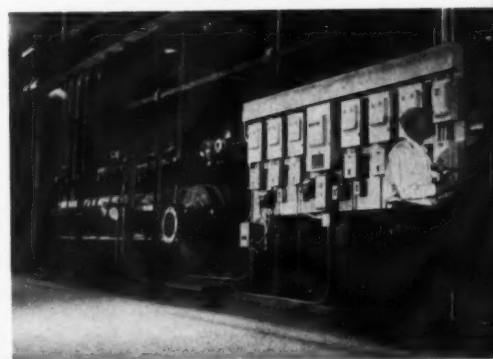
Chalkboards, as produced by Bettinger, consist of a matte ceramic coating fused to a steel sheet and laminated to a plywood or masonite backing sheet. Widely used in place of the familiar slate board in schools, laboratories and other institutional applications, it also has the advantage of being suitable for posting maps, diagrams, and charts because the steel face attracts magnets.

Packaged buildings—The modular-design packaged service station was developed for both domestic and international gasoline marketing outlets. More than \$500,000 was invested in development, engineering, testing, and pilot productions of the unit. Present commitments on the part of four major oil companies total \$1 million for 1959.

Industrial roofing and siding—A recent development, stemming from the research that the company has done on

to Page 79 →

Control system for the eleven-burner continuous furnace.

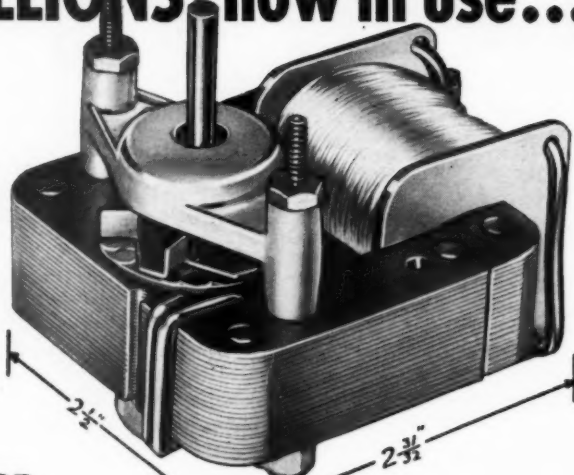


GENERAL INDUSTRIES

Smooth Power
AC MOTORS

1/1800 H. P. TO 1/35 H. P.

MILLIONS now in use...

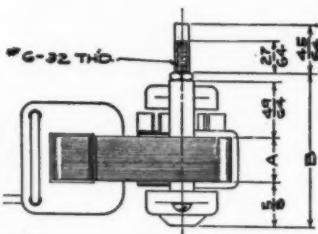


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MODEL A Two-pole, shaded-pole motor available in various lamination thicknesses. Proved dependable millions of times over, it's the power choice of the nation's great-name manufacturers... setting an amazing performance record in countless applications from phonographs to kitchen fans to pumps. If dependability is your aim, Model "A" is your motor!



MODEL	HP 2880 RPM	LOCKED TORQUE in./oz.	MAXIMUM TORQUE in./oz.	FREE SPEED RPM	AMPS FREE	WATTS FREE	A	B	Standard Shaft Diameter .1817 1/4" Diameter Shaft Available If Required
A-3-CW A-3-CCW	1/300	0.7	1.1	3360	.275	10	3/8"	1 3/8"	
A-4-CW A-4-CCW	1/350	1.0	1.4	3380	.375	14	1/2"	2"	
A-5-CW A-5-CCW	1/180	1.7	2.7	3430	.460	17	5/8"	2 1/8"	
A-6-CW A-6-CCW	1/130	1.9	3.3	3430	.500	19	3/4"	2 1/4"	
A-7-CW A-7-CCW	1/100	2.1	3.8	3500	.530	20	7/8"	2 3/8"	
A-8-CW A-8-CCW	1/90	2.5	4.5	3480	.550	23	1"	2 1/2"	
A-9-CW A-9-CCW	1/70	2.7	5.3	3520	.620	27	1 1/8"	2 3/4"	
A-12-CW A-12-CCW	1/60	3.0	6.5	3500	.720	28	1 1/2"	3"	
A-14-CW A-14-CCW	1/50	3.1	7.0	3490	.730	33	1 3/4"	3 1/4"	
A-16-CW A-16-CCW	1/45	4.0	7.5	3490	.730	39	2"	3 1/2"	

Write today for catalog sheet and quantity-price quotations.



THE GENERAL INDUSTRIES CO.

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INDUSTRY MEETINGS

GAS ASSOCIATION

American Gas Association's Annual Convention, Conrad-Hilton Hotel, Chicago, October 5-7, 1959.

TOOL ENGINEERS

American Society of Tool Engineers Semi-Annual Meeting, Chase Hotel, St. Louis, Mo., October 7-10, 1959.

SUGGESTIONS SYSTEMS

The 17th Annual National Association of Suggestion Systems' Convention, Sheraton-Jefferson Hotel, St. Louis, Mo., October 11-13, 1959.

TESTING MATERIALS

The American Society for Testing Materials' Third Pacific Area National Meeting, Sheraton-Palace Hotel, San Francisco, Calif., October 11-16, 1959.

MAGNESIUM ASSOCIATION

The 15th Annual Magnesium Association's Convention, Hotel Roosevelt, New York City, October 19-20, 1959.

PAINT INDUSTRIES SHOW

The 37th Annual Meeting of the Federation of Paint and Varnish Production Clubs and The 24th Paint Industries Show, Atlantic City, New Jersey, October 21-24.

HOME LAUNDRY CONFERENCE

The 13th National Home Laundry Conference, Statler-Hilton, NYC, October 29-30.

AUTOMATIC MERCHANDISING

National Automatic Merchandising Association's Convention-Exhibit, Conrad Hilton Hotel & Navy Pier, Chicago, Ill., October 31-November 3, 1959.

AIR CONDITIONING

The 11th Exposition of the Air Conditioning and Refrigeration Industry, Convention Hall, Atlantic City, N. J., November 2-5, 1959.

METALS

The 41st National Metal Exposition & Congress, International Amphitheatre, Chicago, Ill., November 2-6, 1959.

PEI FORUM

The Porcelain Enamel Institute's Shop Practice Forum, The Ohio State University, Columbus, Ohio, November 4-6, 1959.

ELECTRICAL MANUFACTURERS

National Electrical Manufacturers' Association's Annual Meeting, Traymore Hotel, Atlantic City, N. J., November 9-13, 1959.

INDUSTRIAL DESIGN

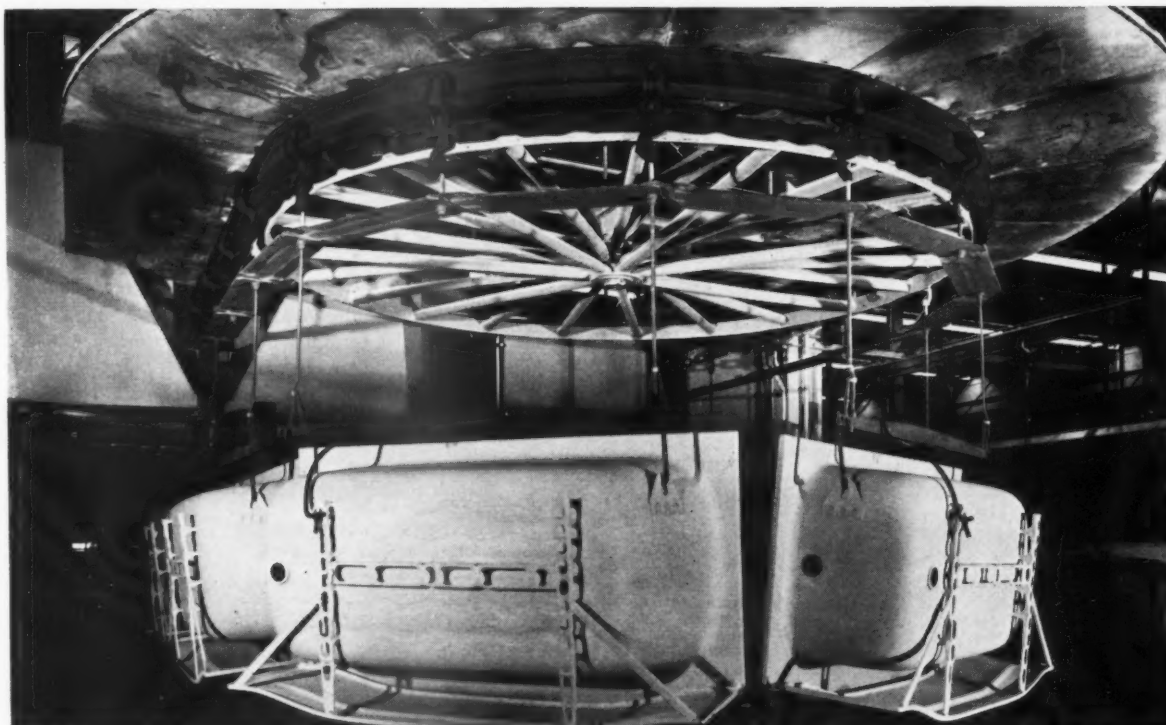
The American Society of Industrial Designers' Meeting, Hotel Statler, New York City, N. Y., November 12-14, 1959.

APPLIANCE TECHNICAL CONFERENCE

First Western Appliance Technical Conference, AIEE-Sponsored, Biltmore Hotel, Los Angeles, Calif., November 16, 1959.

LINK-BELT trolley conveyors

run parts continuously through finishing systems



WASHING, PAINTING, COATING, BONDERIZING, PARKERIZING, DIP-GALVANIZING—practically *any* finishing job can profit from the smooth, low-cost transportation provided by Link-Belt trolley conveyors. These versatile units carry products of all sizes and shapes . . . travel any path, at any speed, for any length. Especially important, they're easily built into spray booths, ovens and other integrated finishing facilities.

Perhaps this versatility can be put to your advantage. With the experience gained on hundreds of trolley conveyor installations—involving products and layouts of all kinds—Link-Belt can quickly answer any questions you have. Call your nearest Link-Belt office today for consultation . . . or write for Trolley Conveyor Book 2330.



MADE IN A BEARING PLANT BY BEARING SPECIALISTS! Precision-made Link-Belt ball bearing trolleys are designed to maintain continuous rolling contact in all positions . . . create minimum power demand. Hardened, concentrically ground raceways, accurately cage-spaced balls, frictionless labyrinth seals—all assure smooth trolley operation.

PLUMBING FIXTURES ride a mile-and-a-half network of Link-Belt trolley conveyors at Briggs Manufacturing Co., Warren, Mich. The Ferro Corporation of Cleveland furnished enameling facilities—chose Link-Belt trolley conveyors for spray booths, drying ovens, blowoff booths, furnaces. Above, bathtubs make 180° turn to enter furnace. Furnace seal plates protect the conveyor.



METAL FOLDING CHAIRS travel on a Link-Belt trolley conveyor system through cleaning, bonderizing, painting and baking operations at American Seating Co., Grand Rapids. System was developed by De Vilbiss Metal Fabricators. (prime contractors for finishing operations) and production engineers of American Seating Co.

LINK-BELT

TROLLEY CONVEYORS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1, To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.

NEW

INDUSTRIAL LITERATURE

Pneumatic Cylinder System

Description of a pneumatic cylinder system for automatic feeding and ejecting is given in literature available from this manufacturer. By touching a valve, the pneumatic piston advances the saw blade through the stock at a uniform rate, then returns it to the rest position automatically. The operator can interrupt the cycle and return the blade to the rest position at any point. To obtain the literature, contact Dept. MPM, Production Machinery, Inc., P. O. Box 322, Des Plaines, Ill.

Compressed Air Booklet

A booklet entitled "Compressed Air Fundamentals" aids in the selection of a small "packaged" air compressor for either automotive or industrial application. The booklet describes compressed air, how the air is compressed, single and two-stage compressors, piston displacement, actual delivery, unloading of compressors, regulation, and types of controls used. For the booklet, write to Dept. MPM, Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.

Centrifugal Pumps

Bronze and iron centrifugal pumps with capacities up to 320 gpm, and pressures to 40 psi, are described in Bulletin No. 1004. The six-page bulletin lists uses, along with performance data on clockwise, counter clockwise, and reversible pumps. Specifications and prices are given. For a copy of the bulletin, write to Dept. MPM, Marine Products Co., 515 Lyncaster, Detroit 14, Mich.

C-Clamp Catalog

A four-page illustrated and condensed catalog describing C-clamps and giving details of their construction has been made available. A unique process used to harden frames, spindles, and handles is described in detail.

The catalog contains specifications, work capacity, throat depth, spindle diameter, minimum proof test, and weight for each C-clamp series. For a free copy of the catalog, write to Dept. MPM, Wilton Tool Mfg. Co., Schiller Park, Ill.

Shaped Tubing

Shaped tubing in square, rectangle, elliptical, oval, and a great variety of other cross sections is illustrated and described in Data Memorandum No. 17. Analyses in which the shaped tubing is furnished include stainless steels, carbon and alloy steels, nickel, and nickel alloys. The data memorandum describes methods of manufacture and tool charges, tempers, and lengths in which furnished. Copies are available free from Dept. MPM, Superior Tube Co., 1640 Germantown Ave., Norristown, Pa.

Aluminum Bronze Bars

A four-page, two-color folder describing aluminum bronze bars is now available. The folder outlines the advantages of both solid and centrifugally-cast cored bars which are available in standard 12½-inch lengths and in sizes up to 8-inch OD. Additional information is provided covering applications in gears, worms, worm wheels, and valve seats. To obtain the folder, contact Dept. MPM, Johnson Bronze Co., New Castle, Pa.

Net Price Catalog

An extensive 88-page net price catalog is now available from a manufacturer of corrosion resistant fastenings. The company's idea of making known their price structure by new prices is said to be a departure from the habits of the bolt and nut industry. To obtain a copy of this net price catalog, write to Dept. MPM, H. M. Harper Co., Sales Materials Dept., Morton Grove, Ill.

Aluminum Conductor Standards

Copies of two new international standards for aluminum conductors have become available through the American Standards Assn. Published by the International Electrotechnical Commission, they are: Publication 104; "Recommendation for an International Specification for Aluminum Alloy Conductor Wire of the Aluminum-Magnesium-Silicon Type." Publication 105; "Recommendation for Commercial-Purity Aluminum Busbar Material."

Ceramics Color Chart

Colors ranging from lemon yellow to mahogany brown are offered in a ceramics color chart now available from this basic oxide manufacturer. With these basic oxides, it is claimed that about any shade in the color spectrum is possible for porcelain enameling.

Facts about mixing, milling, and firing are reviewed on the back of the color chart. To obtain a copy of the chart, write to Dept. MPM, Pemco Corp., 5601 Eastern Ave., Baltimore 24, Md.

Aluminum Construction Manual

Computations for the allowable loads for beams and columns of aluminum alloy 6061-T6, one of the widely-used aluminum structural alloys, are presented in a booklet entitled, "The Aluminum Construction Manual." Fundamentally a reference work, contents are arranged in five parts. Copies are available at \$3.00 each from Dept. MPM, The Aluminum Association, 420 Lexington Ave. New York 17, N.Y.

Radiation Pyrometer

Catalog No. 105 gives detailed information on an improved radiation pyrometer and features technical information on the principles of radiation pyrometry, illustrations, and other data. The four-page catalog tells the scope of applications and includes information on operating principles and directions. To obtain a copy, write to Dept. MPM, The Pyrometer Instrument Co., Inc., Bergenfield, N. J.

Lamp Harnesses Catalog

Completely wired, ready-to-install harnesses or assemblies with different combinations of fluorescent lamp holders, starter sockets, switches, and a plug-in ballast, are fully described in a catalog entitled "Electrical Wiring Devices." Either black, white, or colored wire of any required length and spacing joins the units and eliminates the usual wiring, soldering, and splicing. Switches or thermal flashers can be assembled in the harnesses, also. Copies of the booklet are available from Dept. MPM, Kulka Electric Corp., 633-643 S. Fulton Ave., Mt. Vernon, N. Y.

Home Laundering Dictionary

A 24-page dictionary of home laundering terms has been recently published by the American Home Laundry Manufacturers' Assn. Designed for use in instructing consumers, colleges and high schools, in advertising and promotion copy, by better business bureaus, by

to Page 53 →

New **A**luminum Forms, Finishing
and Fabricating Techniques
Offer New Design Possibilities
in Ranges and Ovens



SEE NEXT THREE PAGES →



TEXTURED SHEET WITH
EMBOSSD CONTACT AREA

CONCEALED RANGE AND OVENS

WITH HINGED WORK SURFACE

REYNOLDS ALUMINUM



COUNTER TOP RANGE

CAST ALUMINUM LEGS
FIT INTO EXTRUDED
SECTION AND FASTEN
TO BOTTOM OF CABINET

FULLY OPEN POSITION

CLOSED

SANDWICH PANEL
OF ALUMINUM WRAPPED
INSULATION WITH FORMICA
COUNTER TOP

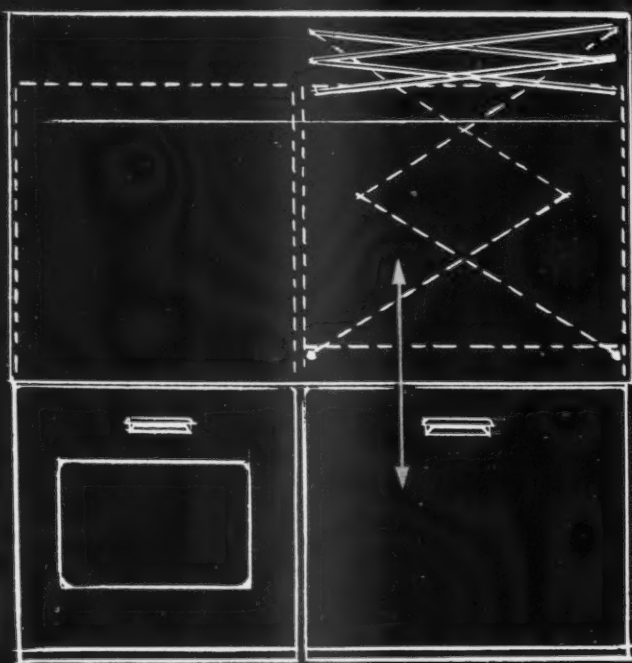
REYNOLDS ALUMINUM

OVEN CONCEALED
WHEN NOT IN USE

OVEN DOWN
IN USE →

COLORWELD PANELS

PULL DOWN OVENS



OVEN SHELLS WOULD BE
COUNTERBALANCED

SEE BACK PAGE →

How aluminum offers range and oven manufacturers

VERSATILITY and ECONOMY

in Styling, Fabricating and Finishing

The sketches on the preceding pages by Reynolds Styling and Design Department suggest a few of the many new ways that strong, lightweight, rustfree aluminum can contribute to modern range and oven design. There are almost unlimited combinations of design possibilities with aluminum, because aluminum is the most versatile of all metals. Here are a few examples of styling, fabricating and finishing techniques both possible and practical with aluminum.

In fabrication, aluminum can be drawn, extruded, cast, stamped, roll formed, expanded, perforated or pierced. A wide choice of *attachment* methods is also available: welding, mechanical fasteners, tabs and cast pegs, bolts and rivets, metal stitching and epoxy resin adhesives are among the most common. In *finishing*, a wide variety of sales appealing colors can be easily obtained through painting and color anodizing. A variety of surface textures is also available. This versatility also points the way to manufacturing economies. For instance, modern techniques in design, tooling and assembly permit higher rates of production with aluminum at low cost. Aluminum extrusions, with their nominal die costs, are a good example. Aluminum's light weight cuts costs of certain reinforcing or supporting parts. Lightweight aluminum also lowers handling and shipping costs.

Economies in finishing are also worth investigating. One-Side-Bright aluminum can be used to eliminate costly buffing operations. Pre-

painted aluminum sheet (Reynolds Colorweld Aluminum Coil) is ideal for applications calling for a painted stock. Colorweld Aluminum Coil can be formed and fabricated.

Embossed or brush finished aluminum sheet, in standard or special designs, requires no additional finishing operations—permits low cost styling “change-overs”. Laminates of aluminum with vinyl plastics or wood cut costs and weight in sandwich panel and other decorative or functional part construction.

New ideas for using aluminum in refrigerators and other appliances are being developed constantly. Reynolds Styling and Design and Product Development groups are ready to assist your own stylists and engineers in putting the newest and best aluminum forms, finishes and fabricating techniques to work in your products. Reynolds fabricating facilities are also at your service to assist in actual fabrication of finished aluminum parts. For highest quality aluminum mill products or for details on these services, contact your nearest Reynolds branch office or write *Reynolds Metals Company, P.O. Box 2346-AW, Richmond 18, Virginia*.

NOTE: Before you make or buy any appliance part, have it designed and priced in aluminum. Remember—basic material costs do not determine part costs. New techniques and processes—applicable only to aluminum—can often give you a better product at a lower final cost.

REYNOLDS ALUMINUM

Watch Reynolds TV shows—“ALL STAR GOLF” and “ADVENTURES IN PARADISE”—ABC-TV



New literature

→ from Page 48

publications, and within the industry, the booklet was prepared by AHLMA's Home Economics committee in conjunction with allied laundry aid manufacturers. Copies may be obtained at 10¢ each from the American Home Laundry Manufacturers' Assn., 20 N. Wacker Dr., Chicago 6, Ill.

Masking Brochure

Finishing department heads will find time-saving aids for masking parts before painting or plating operations in the new masking brochure just issued. Masking tape discs in sizes from 1/8 inch in diameter up, discs made from special tape for anodized surfaces, heavy cardboard discs for flush masking, taper and self-threading plugs, and very narrow masking tape as small as 1/32" wide are among the many masking aids illustrated and for which convenient dimension specifications are provided. For your copy of the new M-24 Masking Brochure, write Dept. MPM, By-Buk Co., 4314 West Pico Blvd., Los Angeles 19, Calif.

Finishing Systems Bulletin

This bulletin contains information on washing machines, phosphatizing units, dry-off ovens, dip tanks, spray booths, flo-coaters, finishing ovens, conveyors, and complete systems. It provides typical finishing system applications and specifications. Write Dept. MPM, Michigan Oven Co., 411 Brainard, Detroit 1, Mich.

Handbook on Frames

This handbook covers both aluminum and stainless steel frames. It provides complete information and 50 reference tables showing which frame to order for each of 1,062 different sinks, lavatories, gas and electric ranges, drinking fountains, etc. For your copy of this handy reference, write Dept. MPM, Walter E. Selck & Co., 225 W. Hubbard St., Chicago 10, Ill.

Machinery Systems Catalog

A 40-page catalog on machinery and machinery systems for metal surface processing (cleaning, washing, rinsing, drying, spraying, and flow and dip coating) is now available. The publication illustrates and describes drum-type machines, conveyor machines and systems, combination drum and conveyor machines, monorail machines, and com-

plete automatic finishing systems.

The finishing systems section is illustrated with photographs and flow diagrams of actual in-plant installations. For a copy of the catalog, write to Dept. MPM, Ransohoff Co., North Fifth St. at Ford Blvd., Hamilton, Ohio.

Power Conveying Systems

Three versatile power conveying systems are described in a brochure containing component and application illustrations and detailed specifications. The conveyor systems are available in, (1) the light product type, linked-rod belt construction, (2) the heavy-duty, slat-type construction, and (3) the canvas, rubber belt equipped conveyor. All three types are offered in a variety of standard widths. The brochure may be obtained from Dept. MPM, Union Steel Products Co., Industrial Conveyor Div., Albion, Mich.

Service Manual

The 1959-'60 edition of a service manual on air compressors and spray equipment is now available. It has over 400 pages containing parts lists, general information on installation, operation, and maintenance, and other service information. The manual is priced at \$2.50 net, F.O.B. Toledo; to obtain a copy, write to Dept. MPM, DeVilbiss Co., Toledo, Ohio.

Soldering Manual

Containing 176 pages, 81 illustrations, and 34 tables, this manual covers all phases of soldering, combining the theoretical with the practical. Chemical composition of solders are given, together with flux formulations for the various metals. Copies may be obtained at \$5.00 per copy from Dept. MPM, American Welding Society, 33 W. 39th St., New York 18, N.Y.

Nut And Fasteners Catalog

A line of various clinch, pilot, and weld nuts in standard and special types are fully described in a 16-page, liberally-illustrated catalog. Specifications and applications for all fasteners in the series are given. Featured in the catalog is an expansion nut suitable for use in either manual or automated fastening applications. Also provided are tables on recommended nut torque and pertinent screw thread information. For a copy of the catalog, write to Dept. MPM, The McLaughlin Co., 212 Jaikens Bldg, Birmingham, Mich.

Retaining Ring Manual

An engineering specifications manual, said to cover 80 per cent of the known retaining ring applications, has been released. The 40-page manual contains application illustrations as well as information on the selection of materials and finishes, design factors, charts on rotative speeds, thrust loads, and typical layouts for both internal and external ring applications. A free copy of the manual may be obtained from Dept. MPM, Retaining Ring Div., Ramsey Corp., 3693 Forest Park Blvd., St Louis 8, Mo.

Door Heaters

Door heaters to temper cold air when outside doors are opened are described in a two-page bulletin now available. The high velocity door heaters for steam or hot water systems are mounted inside and above doors which must frequently be opened regardless of outside temperature. The heaters provide heated air to prevent drafts when doors open, and to maintain an even temperature within the building. For a copy of bulletin DH-59, write Dept. MPM, L. J. Wing Mfg. Co., Linden, N. J.

New Perforated Steel Patterns

Twelve new decorative designs of a line of stock perforated patterns for metal are illustrated and described in a supplement to the booklet "Stock List of Industrial and Decorative Perforated Metals." The patterns are available for immediate shipment in 36" x 120" sheets of 22 and 24-gauge steel. Several of the designs also offer 20-gauge steel. Copies may be obtained by writing to Dept. MPM, The Harrington & King Perforating Co., Inc., 5640 Fillmore St., Chicago 44, Ill.

AC Motor Catalog

This catalog provides complete information including quantity-price quotations for a complete line of ac motors. The line runs from 1/1800 hp to 1/35 hp. Write Dept. GF, The General Industries Co., Elyria, Ohio.

Electrocleaning Folder

A colorful, six-page folder discusses in detail electrocleaning, spray cleaning, soak cleaning, and buffing compound removal, with emphasis on fitting the product to the job. Photographs show

facilities and actual plating operations. For a copy of the folder, write to Dept. MPM, J. B. Ford Div., Wyandotte Chemicals Corp., Wyandotte, Mich.

Rectifiers For Plating

Bulletin #100 covers a complete line of selenium, germanium, and silicon rectifiers for plating. They have ratings varying from laboratory types to 500 kw. The 16-page bulletin includes specifications, technical data, and illustrations of different types of rectifiers with and without full automatic control and temperature-compensated circuits. For a copy, write to Dept. MPM, DJECO, Div. of Djordjevic Engineering Co., 1933 N. Damen, Chicago 47, Ill.

Thread Tap Standards

The latest revision of the American standard on cut and ground thread taps, incorporating the complete revision of tap standards instituted by the tap manufacturers in 1955, has been approved by the American Standards Assn. and published by the American Society of Mechanical Engineers.

The publication includes tap styles, nomenclature and definitions, thread series data, a standard system of marking, and dimensional and tolerance tables for right hand thread taps. It is

available at \$2.50 per copy from Dept. MPM, American Standards Assn., 70 E. 45th St., New York 17, N.Y.

Machine Mounts

Literature describing and illustrating new machine mounts designed for vibration control and shock protection has been made available. It contains reproductions of product photographs, design sketches, and application tables. The literature may be had free of charge by writing Dept. MPM, Consolidated Kinetics Corp., 1065 Dublin Rd., Columbus 8, Ohio.

Cold Iron Phosphate Process

An automated cold iron phosphate process plus informative quality control data is provided in Bulletin 1698 offered by this manufacturer. This new pre-paint treatment for steel is said to provide on-the-line savings of 50 per cent or more in heating. Typical heat savings are said to range up from \$12,000 per year on large volume lines. To obtain a copy of the bulletin, write to Dept. MPM, Amchem Products, Inc., Ambler 21, Pa.

Electrocoating Brochure

No. 2 Process Brochure shows numerous examples of modern production

painting in both large and small plants with this electrostatic hand gun. This process is claimed to save time, paint, and cut costs in the finishing department. For the bulletin, write to Dept. MPM, Ransburg Electro-Coating Corp., Box 23122, Indianapolis 23, Ind.

Sub-Fractional Hp Motors

Sub-fractional hp electric motors are described in a complete catalog offered by this manufacturer, who offers "Modern manufacturing facilities and engineering know-how." For the catalog, write to Dept. MPM, Speedway Mfg. Co., Div. of Thor Power Tool Co., LaGrange Park, Ill.

Shipping Containers

A free illustrated catalog describes a line of shipping containers and services available to appliance manufacturers for shipment of their products. These containers are said to protect the finishes and mechanisms, withstand the handling and shocks encountered during overseas shipment, discourage pilferage, and practically eliminate loss and damage claims. For a copy of the catalog, write Dept. MPM, Chicago Mill & Lumber Co., 33 S. Clark St., Chicago 3, Ill.

to Page 57 →

LEARN how Amerock hardware design gives you more functional sales appeal . . .



FREE Amerock IDEA FILE shows you how to combine hard-sell attractiveness with hard-rock practicality. Choose a handsome standard design from the largest selection available; or have exclusive, new hardware created by Amerock engineers and stylists. Amerock meets individual customers' requirements as to styling, function, cost, and assembly efficiency. Write for your IDEA FILE today. **FREE!**

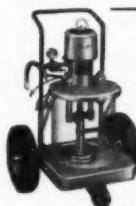
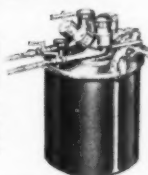


Hardware that helps to sell your products!

AMEROCK CORPORATION
Dept. MP-910 Rockford, Illinois

What Paint Pump Do You Need?

1-5 GALLON? Then check on the Graco Redi-Spray. This new Graco unit mixes and sprays enamels, primers, lacquers, sealers, vinyls, sizing, etc., direct from original 1-5 gallon shipping pails. Simple to operate—change colors in seconds. Pump action is practically fool proof . . . provides a constant supply of paint for each triggering of the spray gun.



1-5-10 GALLON? Truck mounted Graco Hydra-Spray does the job faster, saves paint, too. There's no atomizing air to cause overspray and bounceback. You can put up to 50% more paint on the work. Permits heavier paint film, often eliminates a second coat. Low operating cost—smaller compressor required. Less air used . . . no heaters . . . no exhaust units. Hydra-Spray is also available for 55 gallon drums.

55 GALLON? Pick the new Bung-Type Pump for unpigmented paints, primers and lacquers. It pumps direct from 2" end bung of drum. Skid mounted Hydra-Spray is ideal for heavier, pigmented paints. Or, a Graco Engineered Circulating System may be your answer. You can incorporate direct from drum pumps of any size . . . for multiple outlets . . . for special materials . . . for distance problems.



See GRACO EQUIPMENT IN ACTION AT THE NATIONAL METAL SHOW, NOVEMBER 2, CHICAGO, ILLINOIS

(See Phone Book Yellow Pages, "SPRAYING," for Graco Suppliers)

GRACO
1026 Graco Square
Minneapolis 13, Minnesota



Unit sisal wheel.



Whereas buffing of stainless steel parts requires many of the same materials and operations used for other metals, there are certain differences which

must be considered in order to do the most efficient job.

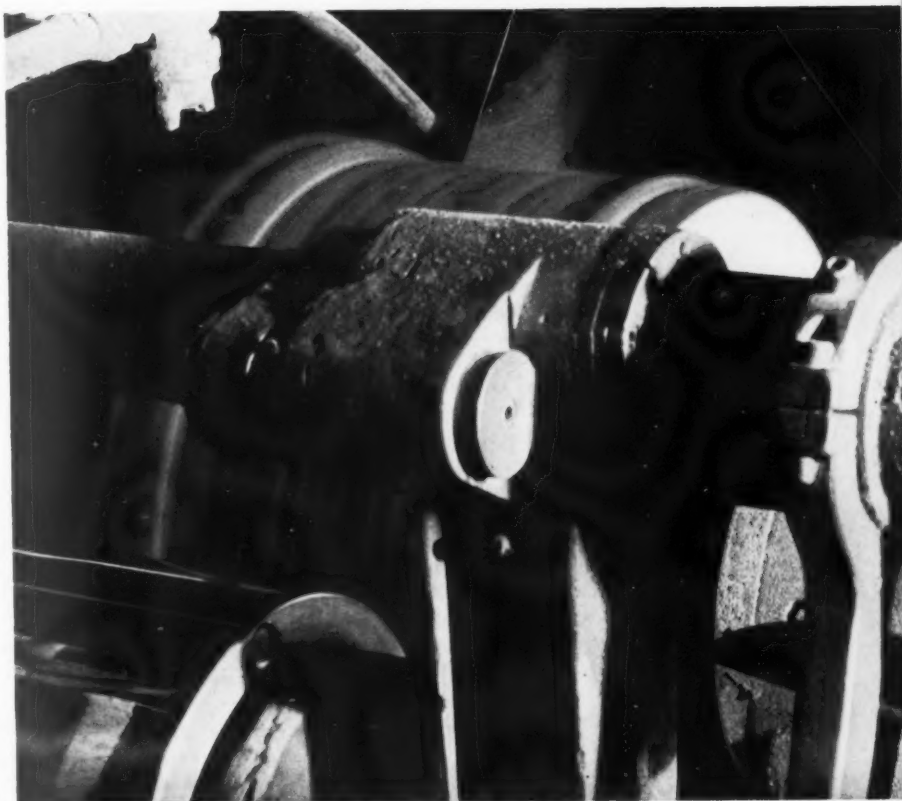
Because stainless steels have a greater hardness and resistance to abrasion than carbon steels, the amount of metal removed under similar conditions will be less. A common error in buffing stainless steels is to increase the pressure of the buff against the part to step up metal removal. Increased pressures should be avoided as stainless steels have considerably less thermal conductivity than carbon steels and the part will become overheated. This may cause discoloration or warpage, and with a certain type of stainless steels the corrosion resistance of the metal may be affected. To a degree, the temper of the metal also will affect the process of buffing.

The purpose of this article is to highlight important factors involved in the buffing of stainless steel parts. This oper-

an outline of materials and practices, and a listing of "do's and don'ts," in the . . .

Buffing of stainless steel

by Stanley P. Pax • VICE PRESIDENT,
AMERICAN BUFF CO.



View of puckered buff used in the high-production buffing of automotive part.

ation, of course, covers the procedures of refining the finish of a part down to the final high gloss.

In the use of conventional buffs of the solid cloth variety, variation in sewing of the buff, or the lack of it, determines how the buff is used. Sewed buffs are used for "cutting." The closer sewings result in more cut for buffing out deeper scratches and other imperfections. Unsewed discs and full disc loose buffs are used for "coloring" or

applying a very high polish to a part.

Selection of the cloth

Different cloths are used for different purposes. For example, Domet Flannel, with nap on both sides, and Canton Flannel, with nap on one side and twill on the other, are used where other materials tend to scratch, or fail to produce a high luster.

With the advent of greater production of bright metal parts has come in-



Closeup of puckered buff. Note mirror-like finish of buffed part at right.

creased use of automatic machinery, greater speeds, pressures, and dwell time, with less index, or rest time. This has caused more heat buildup in buff wheels, particularly when used on stainless steels. It is here that the "puckered buff" serves an extremely-useful purpose. The puckered, or ruffled, characteristics of this type of buff allow it to run cooler than the older types. Sometimes, however, operating conditions cause these buffs to run too hot, with a resultant drying out of the cloth. Under severe conditions, the result may be scorching and even bursting into flame. To alleviate overheating, cardboard flutes are sewed on to direct the air flow, or cardboard centers are pressed thinner with ridges to guide the air. The steel center ventilated puckered buff is another useful, cool-running variation of the puckered design.

What size buff?

Industry standards for sizes of buff centers are 3", 5", 7" or 9". The proper size depends on how far down the buff can be used before (1) the surface speed reduces to a point of inefficiency or (2) flexibility reduces to a point of inability to follow contours.

Generally speaking, the smaller the inside buff diameter, the larger the outside diameter, and the greater the density, the better. This will result in fewer changeovers, less labor and loss of production due to downtime, and fewer machinery requirements and other costs.

The buff assembly charge remains the same. The only additional cost is material. In puckered buffs, higher density of cloth increases cut, causing increased pucker which reduces streaking.

No description of stainless steel buffing would be complete without mention of the versatility and utility of the centerless buff. The centerless design consists of a wheel, made up of a number of buff sections, that does not require the usual cardboard discs, or steel center plates. Buff sections may be added or removed, depending on the requirements and size of the work. Superiority of this design is due to the cooler running open center and pre-assembled interlocking characteristics. Its cool running design results in fewer heads needed, fewer passes, faster cut, increased production, and better finish. The interlocking facility results in faster changeover and less machine downtime due to ease in loading and unloading. It also retains better balance and contour.

In one cookware manufacturing plant, different sized and shaped pots and pans are buffed on the same rotary automatic. Centerless buffs used on one size pot are set aside when different sized pots are run. The centerless buffs intended for the next item are mounted in a matter of seconds.

Special centerless buffs are also used as polishing wheels. The main advantage of centerless for polishing wheels

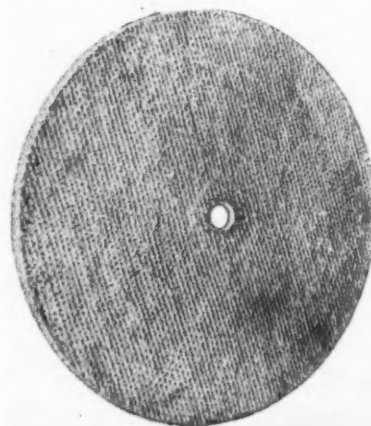
is the facility of adding or removing buff sections, thus widening, narrowing, and changing the contour of the wheel.

Sisal buffs are tough

Sisal buffs have come to be used to an increasing degree. Sisal's advantages are its toughness, great structural strength, and resistance to deterioration by buffing compounds.

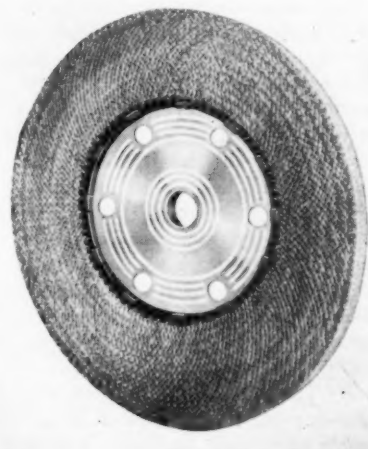
When sisal buffs were first used, they were covered by cloth because the coarse fibers of sisal had a tendency to cut the cotton threads of adjoining buffs. Cloth was also used in the interior of the buffs to provide a better base for stitching and to improve compound retention and reduce unraveling. Krinkle kraft paper is sometimes used with sisal to increase cut.

The equipment used to pucker cloth buffs has been adapted to sisal buffs, with even greater advantages than in



Conventional sisal buff.

(Below) — Puckered sisal buff.



cloth buffs. Fray is reduced by a large margin, and treatments have been developed that bind the fibers together. For jobs requiring a hard surface, a flat puckered sisal buff was also developed. As steel and stainless steel parts increased in contour complexity, buffs were given softer treatments, and wider sewing and spacers were used. This was not enough, and two ingenious products were developed: the unit sisal, or spoke sisal, and the open cloth puckered sisal. These add to the advantages of sisal the compound-retaining characteristic of muslin sheeting. A centerless variation of the open cloth puckered sisal with two layers of cloth and one layer of sisal combines the cut of sisal, the

"coloring" quality of cloth, plus the coolness and automation of the centerless. These designs give us truly flexible sisal buffs for use on contoured steel and stainless steel parts.

Optimum surface speeds

There is an optimum surface speed in buffing for every metal and metal condition. Surface speed is determined by the diameter of the buff and the rpm of the shaft. The surface speed will, of course, decrease as the buff wears down. As compensation in shaft speed is seldom made for this wear down, it is wise to base surface speed on an average usable buff diameter in setting the shaft speed.

SOME "DO'S" AND "DON'TS" IN BUFFING STAINLESS STEELS:

1. Watch your wheel pressure so as to minimize or eliminate overheating.
2. Cleanliness is important. Keep your equipment clean.
3. If you are having difficulty buffing contoured parts with a conventional sisal or a solid puckered sisal buff, use an open puckered sisal buff or a unit sisal buff.
4. For better color, switch compound, or try using sisal buffs with increasing proportions of cloth.
5. For insufficient buff life, try using buffs with golden or black treatments. Another way to increase buff life is to use a buff with closer sewings, or buffs with an increased proportion of high count cotton sheeting.
6. Careful evaluation should be given to such a variable as speed of operation in relation to diameter of buffing wheel.
7. Be sure to seek specific advice from buff and machinery vendors to take advantage of the composite of experience which they have accumulated regarding special problems.

DIAMETER AND SURFACE SPEED OF BUFFING WHEELS

R.P.M. at Arbor or Spindle	DIAMETER OF BUFFING WHEEL IN INCHES											
	4	6	8	10	12	14	16	18	20	22	24	
SURFACE SPEED IN FEET PER MINUTE												
800	837	1256	1675	2094	2513	2932	3351	3770	4189	4608	5026	
900	942	1413	1885	2356	2827	3298	3770	4241	4712	5184	5655	
1000	1047	1570	2094	2618	3141	3665	4189	4712	5236	5760	6283	
1100	1152	1727	2304	2880	3455	4031	4608	5183	5760	6336	6911	
1200	1256	1884	2513	3142	3769	4398	5027	5655	6283	6912	7540	
1300	1361	2042	2723	3404	4084	4764	5446	6126	6807	7488	8168	
1400	1466	2199	2932	3666	4398	5131	5865	6597	7330	8064	8796	
1500	1571	2356	3142	3927	4712	5497	6284	7069	7854	8640	9425	
1600	1675	2513	3351	4189	5026	5864	6703	7540	8378	9216	10053	
1700	1780	2670	3560	4451	5340	6230	7121	8011	8901	9792	10681	
1800	1885	2827	3770	4713	5654	6597	7540	8482	9425	10368	11310	
1900	1989	2984	3979	4975	5969	6963	7959	8954	9948	10944	11938	
2000	2094	3141	4189	5236	6283	7330	8378	9425	10472	11520	12566	
2100	2199	3298	4398	5498	6597	7696	8797	9896	10996	12096	13194	
2200	2304	3455	4608	5760	6911	8063	9215	10367	11519	12672	13822	
2300	2408	3612	4817	6022	7225	8429	9634	10839	12043	13248	14451	
2400	2513	3770	5027	6284	7540	8796	10053	11310	12566	13824	15079	
2500	2618	3927	5236	6545	7854	9162	10471	11781	13090	14400	15708	
2600	2722	4084	5445	6807	8168	9529	10890	12253	13613	14976	16336	
2700	2827	4241	5655	7069	8482	9895	11309	12724	14136	15552	16964	
2800	2932	4398	5864	7331	8796	10262	11728	13196	14660	16128	17592	
2900	3037	4555	6074	7592	9110	10629	12147	13667	15184	16704	18221	
3000	3141	4712	6283	7854	9425	10996	12566	14137	15708	17280	18850	

New literature

→ from Page 54

Paint Stripper Guide

A paint stripper guide for proper selection is available from this manufacturer. Each paint stripper is said to be formulated for the type of metal or alloy to be stripped, the method of application, and the type of finish to be removed. To obtain a copy of the guide, write to Dept. MPM, The Diversey Corp., 1820 Roscoe St., Chicago 13, Ill.

Metal Cleaning Handbook

"Some More Good Things to Know About Metal Cleaning," contains 28 pages filled with information developed over a company's 50 years experience in the metal cleaning and treating fields. The title of the handbook was derived from a similar booklet first published ten years ago.

The handbook discusses the chemistry and techniques of cleaning; tank cleaning, with suggestions for tank design and layout plus selection of detergents; electrocleaning; barrel cleaning; machine cleaning; and ultrasonic cleaning. The book also describes pickling, deoxidizing, and metal etching treatments; prevention of rust between operations and in storage; paint stripping; and paint spray booth water curtain additives.

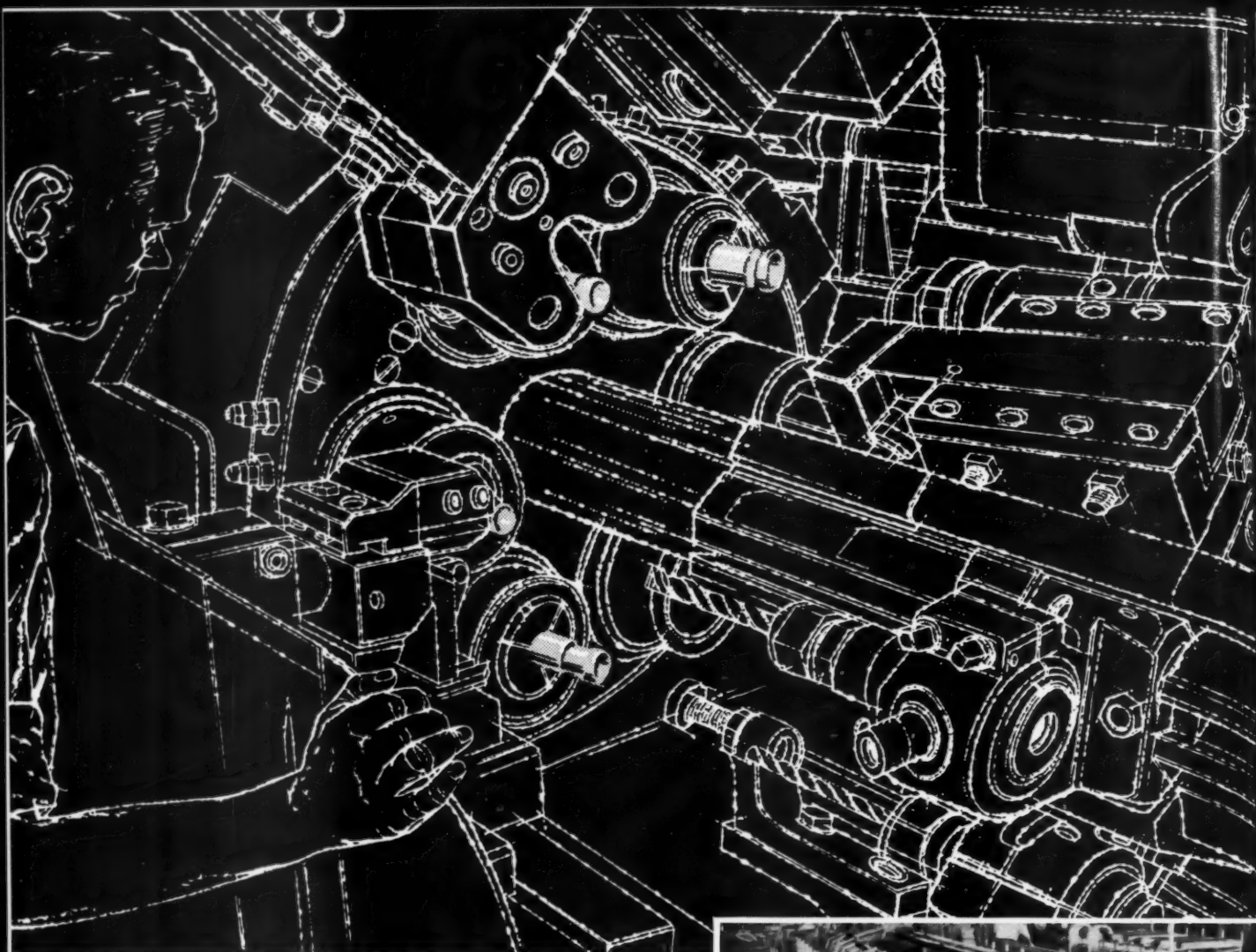
For a free copy of the handbook, contact Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

Trolley Conveyor Book

Trolley Conveyor Book 2330 provides information on a line of versatile trolley conveyors. Practically any finishing job is said to profit from the low-cost transportation provided by these conveyors. The units carry products of all sizes and shapes and travel any path, at any speed, for any length. They are claimed to be easily built into spray booths, ovens, and other integrated finishing facilities. For a copy of the book, write to Dept. MPM, Link-Belt Co., Prudential Plaza, Chicago 1, Ill.

Foamed-In-Place Report

The development of foamed-in-place plastics which provide equal or better cushioning than foamed glass is de-



The Ultimate Test

The ultimate test of quality in stainless steel bars takes place in screw machine production, where every bar is literally cut to pieces.

The Perry-Fay Company, Elyria, Ohio, a leader in screw machine production, has been subjecting J&L bars to this demanding production-line test for more than a year, **without a single failure, without a single reject.** Perry-Fay reports: "We consistently get superior surface finish, closer tolerances, fully formed rolled threads with J&L stainless bars."

Whether you need stainless steel bar stock for high-speed, high-production operations, or a single bar for extraordinary requirements, turn to J&L. J&L leads the industry in melt shop standards for stainless steel, the point where quality starts—and new production profits begin.



Careful attention to many production details is the key to J&L quality.



Plants and Service Centers:
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STAINLESS
SHEET • STRIP • BAR • WIRE

Jones & Laughlin Steel Corporation • STAINLESS and STRIP DIVISION • Box 4606, Detroit 34

scribed in an Army report just released to industry through the Office of Technical Services, U.S. Department of Commerce, Washington 25, D.C. A related Air Force report, which lists numerous advantages in using high density polyurethane, self-expanding plastics for edge banding in prefabricated panels, is also available.

Small Switches Catalog

Catalog #63, titled "Small Basic Switches," covers four important groups—type "V3" postage stamp-sized switches, type "TB" two-circuit switches, type 1SX1 sub-miniature switches, and type "SM" sub-miniature switches. Typical auxiliary actuators and assemblies are shown with each of the four types. All told, the catalog contains details on almost 100 switches, actuators, and assemblies. For a copy, write to Dept. MPM, Micro Switch Div., Minneapolis-Honeywell Regulator Co., Freeport, Ill.

Control System Brochure

"Telecontrol," a management tool for controlling production and boosting plant efficiency, is described in a three-color, six-page brochure now available. This literature graphically explains the simple operation of the device and how

it coordinates and controls in-plant supervision and production activities from a central location. Cited are examples of results in the electrical manu-

facturing and appliance producing fields. For a copy of the brochure, write to Dept. MPM, Hancock Industries, Inc., 2137 Book Bldg., Detroit 26, Mich.

Ground Broken For New Div. Of National Steel Co.

Ground was broken Aug. 18 and construction begun on a \$103-million plant for Midwest Steel Corp., a new subsidiary of National Steel Corp., at Portage, Ind., nine miles east of Gary, Ind. The new plant is part of a \$300-million construction program for National Steel. Production at Midwest Steel is expected to begin sometime in 1961.

Albert J. Berdis, president of the new company and National Steel's Weirton Steel Div., presided at a luncheon before the ceremonies. Speakers included Thomas E. Millsop, president and chief executive officer of National Steel; Paul E. Shroads, senior vice president, National Steel; and Con-



EXCLUSIVE MPM PHOTO

gressman Charles A. Halleck, Indiana.

The first spadeful of earth was turned by silver shovels wielded by Berdis, George M. Humphrey, chairman of National Steel, and Indiana Governor Harold W. Handley.



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- DECORATIVE METALS
- CHROMED HARDWARE
- STOCK EMBOSSED PATTERNS
- MOLDED PLASTICS

... all from press or rolled section tools — anodized — chrome plated — painted — silk screened — lithographed. All in our own plant!

For distinctive decorative trim . . . bezels, control panels, escutcheons for ranges, refrigerators, freezers, washers, dryers and combinations. Add eye appeal — buy appeal to your product, choose Grigoleit!

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HARDWARE, CALL ON —



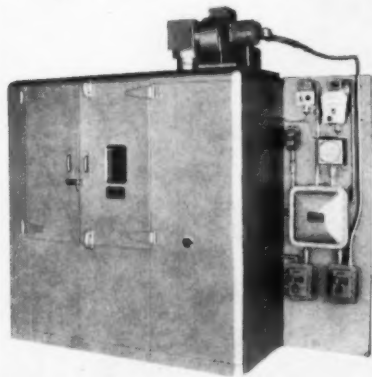
THE GRIGOLEIT COMPANY
Over 30 Years in Plastics
740 E. NORTH ST., DECATUR, ILL.

NEW

SUPPLIES & EQUIPMENT

Laboratory Oven

The new design of a laboratory oven is said to make possible accurate temperature control



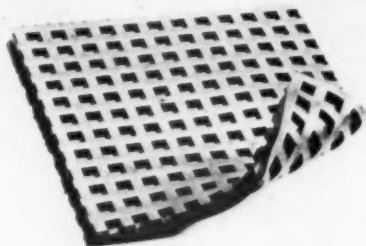
to 850° F. The manufacturer claims improved shape and sizes, more efficient direction of air flow in the work chamber, and new safety controls. The oven is heated electrically. The special convection heat design permits fast heat penetration of all products in the chamber. For further information, contact Dept. MPM, Despatch Oven Co., 611 S.E. 8th St., Minneapolis, Minn.

Portable Label Maker

Prints and die cuts on pressure sensitive label paper, or score cuts on gum, heat seal, or plain paper is simplified with what is said to be the world's smallest flexographic printing press. Measuring only 9 x 9 x 9 inches without guard case, and weighing only 40 pounds, the machine prints 6,000 labels per hour. Colors and printing plates are easily changed. Operation of the portable machine is said to be extremely simple. Contact Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

Machine Mounting Pad

The use of a pad which eliminates the need for bolts, lag screws, or cement under most machines is said to make possible low-cost machine mountings. The pad has suction cells which anchor the machine to the floor, controlling vibration, absorbing shock, reducing noise, and improving machine performance. Manufactured in 18-inch squares, the pads can be cut to any



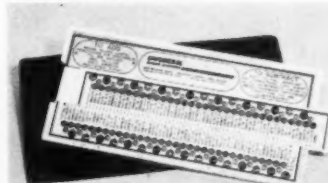
desired shape. For further information, contact Dept. MPM, Fabreka Products Co. Inc., 1190 Adams St., Boston 24, Mass.

Paint Remover

Development of a brush-on, water rinsable paint remover that remains wet and workable for a day or longer has been announced by this manufacturer of industrial chemical processing compounds. A single coating of the new material is said to be sufficient, in most cases, to completely remove up to ten layers of paint. It is claimed to be effective on a wide variety of finishes. For further information, contact Dept. MPM, Turco Products, Inc., 24600 S. Main St., Wilmington, Calif.

Pocket Size Slide Rule

A pocket size (6 7/8 x 3 1/4-inch) slide rule that adds and subtracts fractions and decimal equivalents in calibrations to 64ths has been introduced. Called the Fraction-Master, the calculator is said to aid metal-working shops where fractions and decimals are used, inter-changed, and frequently converted.



Simple directions are printed on the face of the calculator. All calibrations are permanently etched in frosted aluminum plates which are laminated onto a rigid, non-breakable white lucite mounting. It comes in a tan vinyl case. For further information, contact Dept. MPM, The Seymour Co., 701 W. Sheridan Rd., Chicago 13, Ill.

Conveyor Control

A conveyor overload-safety control can be used on any type of conveyor with electric



motor drive, and is offered as an OEM item to other conveyor manufacturers, as well as for installation on existing conveyors. The control's ammeter visually measures the conveyor line pull by monitoring the current drawn by the drive motor or motors. For further information, contact Dept. MPM, Conveyor Div., The American Mono-Rail Co., 4th & Franklin Sts., Tipp City, Ohio.

Appliance Motors

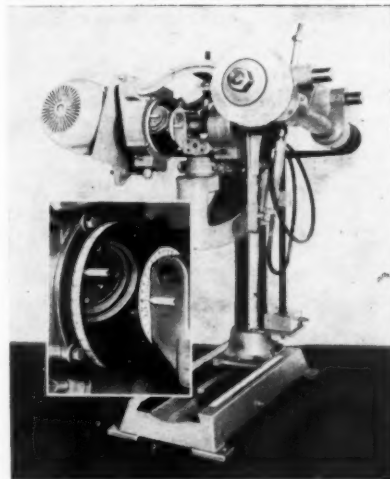
A line of appliance motors that is said to produce 20 per cent more motor output than the previous design has been announced. The motors are about two pounds lighter, also.



Ratings are from 1/6 through 1/3 hp, split phase and capacitor-start, 115 or 230 volts. The motors have a sealed lubrication system which eliminates the need of an oiling hole. For further information, contact Dept. MPM, Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.

Dialed Buffing Heads

Buffing and polishing heads are now available with numbered dials which are said to take the



guesswork out of head positioning. Once correct head positions are found and recorded, heads may be changed and repositioned by use of the dial numbers. Any variation or change in head position appears on the indicator dial. For further information, contact Dept. MPM, Murray-Way Corp., Birmingham, Mich.

New Adhesives Used For Bonding Polystyrene Foam

Two new adhesives for use in bonding polystyrene foam to steel, aluminum, and other materials are said to create a bond that lasts longer than the polystyrene itself.

"A-827-B" is used with foamed-in-place polystyrene and has withstood repeated simulated weather cycles involving immersion in water at 120° F., hot water spray at 160° F., dry air heat at 160° F., and storage at minus 40° F.

"R-1083-T" is used for bonding pre-foamed

to Page 98 →

style is stainless steel

Stainless Steel is the only surfacing material with a hard lustrous finish that is always in style, withstands exposure to all kinds of wear and has a low maintenance cost for the life of the building.

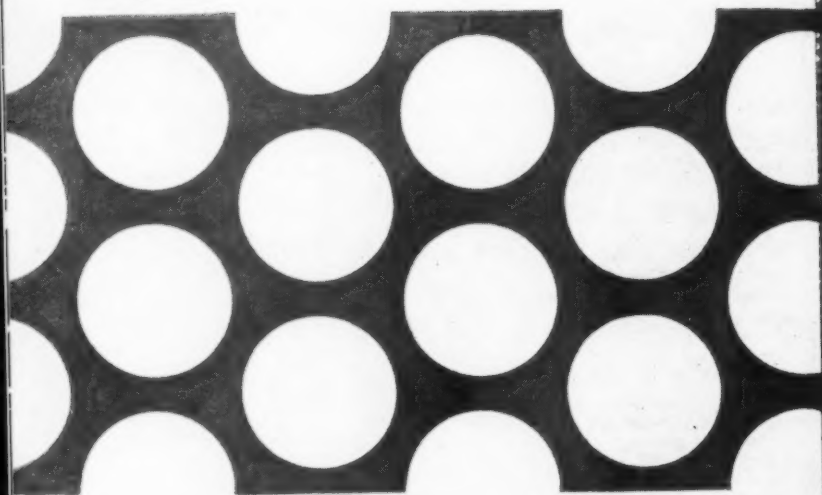
No other metal offers the freedom of design and fabrication, economy of care and the durable beauty that serves and sells like Stainless Steel.

McLOUTH STEEL CORPORATION, Detroit 17, Michigan

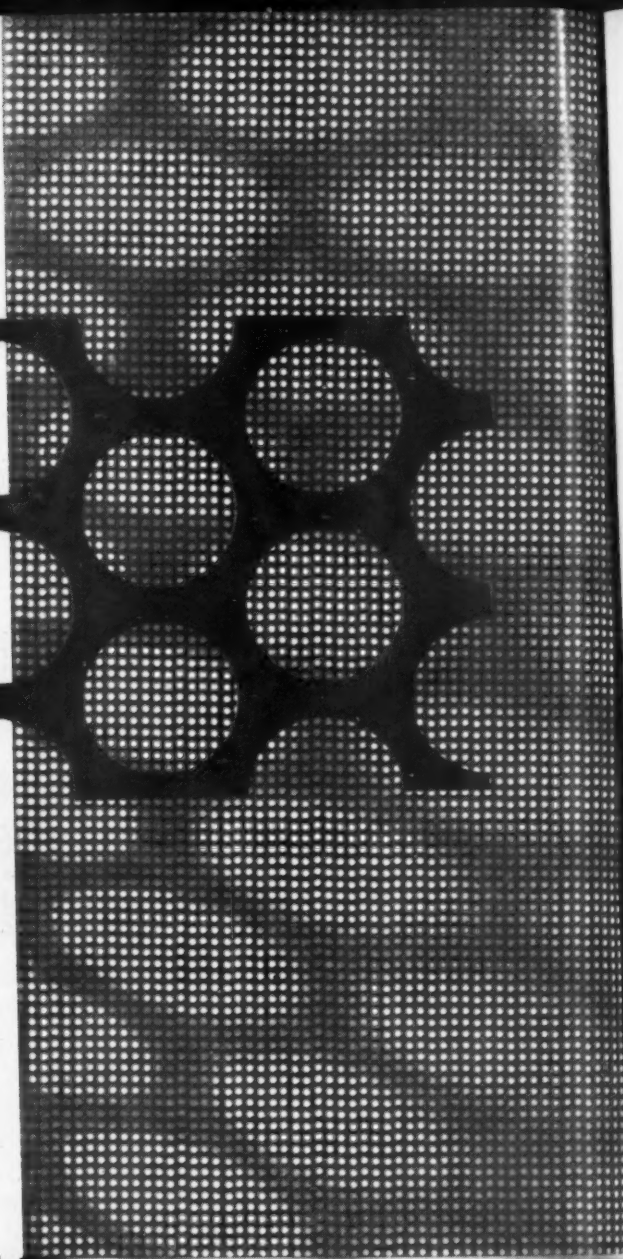
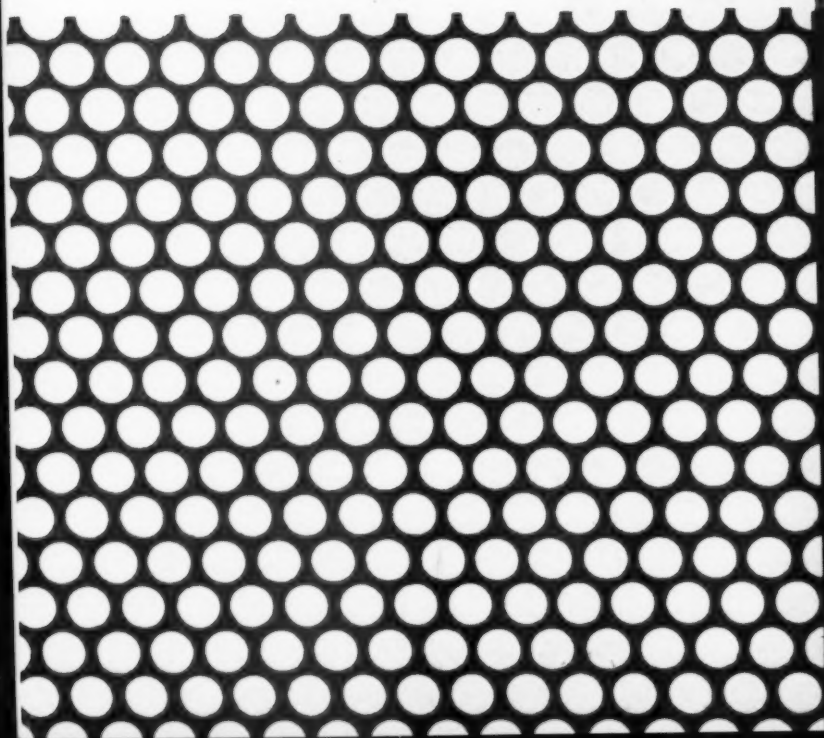


specify
McLOUTH STAINLESS STEEL
HIGH QUALITY SHEET AND STRIP
for architecture

H&K



suppliers of quality
perforated materials
to American industry
since 1883



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Harrington & King
PERFORATING CO. INC.

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Chicago 44, Illinois

New York Office and Warehouse
116 Liberty Street
New York 6, New York

THE Finish LINE

A GUEST EDITORIAL

"I challenge you to publish . . ."

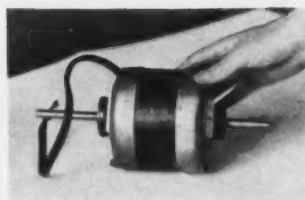
A LETTER FROM

S. H. Isaacs

WHILE WAITING IN A CUSTOMER'S LOBBY, I happened to pick up a copy of your magazine with the sequel editorial on the air conditioner servicing problem. I felt that in this editorial you just touched on a great fundamental problem of the entire consumer goods industry as it exists today. More and more the trend is to appearance and an appeal to impulse purchasing. All the way from a \$.25 package of cookies that are beautifully wrapped and gorgeous to look at but utterly tasteless to a \$25,000 or even more expensive residence that has all the external appearance and functional features that can possibly be included but that starts to fall apart in six months. We are carrying the beautiful facade in front of a shoddy product to a fantastic extreme.

One of these days some manufacturers are going to come up with a tremendous new concept and, like all new things, this will be as old as time. They will feature sturdy, reliable, easily-serviceable products. Suddenly they will capture that element of the buying public that at least attempts to purchase on a logical basis which takes into consideration not only the price and flash features, but also the real value of the product in long term service. These manufacturers may even discover to their total astonishment that this segment of the buying public is large in number and may even be dominant in its total purchasing power.

Now to add one specific example to your long tale of woe on the air conditioner story. On the same day that I read your editorial, I was looking at a brand new hot and cold drinking fountain that we had purchased for our office. As I opened the door of the cute little refrigeration compartment, I saw a label with defrosting instructions. It was a paper label pasted to the inside of the door and the pasting job was even done sloppily so that the paper curls away from the surface of the door at several points. It seems to me that, for a \$500 unit of this sort, the manufacturer could have afforded to use one of the many types of really nice self-adhering metal labels that are on the market, and that it would certainly be within the realm of reasonable plant production control and inspection to see to it that these labels are properly installed. On top of this, the label could have been just a little bit larger and could have included basic routine maintenance instructions like whether



If you read the "Finish Line" editorials in July and August, you might like to see a photograph of the "old motor" which was removed from the air-conditioner.

In the July and August "Finish Line" editorials, and in the special feature by Max Blackman of the Houston Chronicle, which appeared in August, we are painting the picture of dissatisfaction with present service at the user level. This type of case history information will, we hope, spur the OEM to greater attention to the problem.

As we all know, there are two sides to the story, and following the accompanying guest editorial by Mr. Isaacs, we expect to follow through with case history examples of service setups at the local level which are reputedly successful in helping to handle the service problem.

or not there are any recommended lubrication or cleaning instructions. Maybe there is even a recommended procedure for cleaning the heating and cooling coils of this unit.

It is my considered opinion that, as one tiny step in the direction of making products for practical, everyday use in the hands of reasonably-intelligent and thoughtful people, a permanent recommended routine maintenance instruction could well be incorporated into the design of every appliance. With the present high development level of the graphic arts, such instruction plates could usually be included as part of the external surface of the product and still be aesthetically pleasing.

I challenge your magazine to publish this letter and other thoughts along a similar line, and I would certainly like to hear from general managers and marketing managers of appliance firms, to explain to me why these ideas are utterly insane.

Since I do not regularly receive your magazine, and would have no usual requirement for reading it, I would appreciate receiving a copy containing this letter if you publish or refer to it, and any copies that may have further comments on this subject.

The Isaacs Co., 2708 Vine St., Cincinnati 19, Ohio, is a manufacturer's representative and a member of the National Association of Manufacturer's Agents. Numbered among the companies represented by this firm are the following:

Annin, Control Valves	Cox Instruments, Flowmeters
Allenair, Cylinders & Controls	Governaire, Air Regulators
Bellofram, Diaphragm Seals	Industrial Engineering, Panels
Bell & Gossett, Air Compressors	Valcor, Solenoid Valves
Westinghouse, Air Compressors and Pneumatic Controls	



Cribben & Sexton Div. Gets New Quarters

The Product Engineering Div., Cribben & Sexton Co., Chicago, has been moved to its own quarters, approximately three and one-half miles northeast of the main manufacturing plant. The new facilities consist of 23,000 square feet of space at 2835 N. Western Ave., Chicago.

The main plant is located at 700 N. Sacramento Blvd., Chicago. The company manufactures Universal gas and electric ranges and Universal Chef commercial cooking equipment.

Food Waste Disposer Sales Ahead Of Last Year

More than 600,000 food waste disposers were placed in American homes in 1958 and current sales are running substantially ahead of last year, accord-

ing to the Plumbing-Heating-Cooling Information Bureau.

Sales from January to May of 1959 amounted to 285,900, or an increase of 29.1 per cent over sales during the corresponding period in 1958. About 40 cities in the U.S. now require the installation of food waste disposers in new homes.

Roper Reports 28-Week Sales

The Geo. D. Roper Corp. has reported that sales for the 28 weeks ended July 18, 1959 were \$16,078,348 compared with sales of \$15,574,974 in the comparable period last year. Net profit for the period was \$278,111, compared to the 1958 period net profit of \$27,868.

Westinghouse Organizations Build New Facilities

Two Westinghouse Electric Corp. marketing organizations have broken ground for new buildings to serve the Baltimore-Washington market. S. B. Folckomer, manager of the Westinghouse Appliance Sales branches in Baltimore and Washington, has announced that his organization will build a 70,236 square foot distribution center in Savage, Md.

L. G. Schrader, branch manager of the apparatus and supply division of Westinghouse Electric Supply Co., has disclosed that the firm will build a 29,970-square foot building for sales offices and warehouse facilities in Baltimore.

Broderick Forms Own Firm



David J. Broderick has announced his resignation as vice president and director of Walter E. Selck & Co. Broderick concurrently announced that he is forming the David J. Broderick Co., manufacturer's representatives. The new firm is located at 4045 Main St., Skokie, Ill.

Norge Extends Dryer Warranty From One To Five Years

Extension of its automatic clothes dryer warranty from one to five years has been announced by the Norge Div., Borg-Warner Corp. Judson S. Sayre, president of Norge, said the dryer service record made possible the new guarantee.

Said Sayre, "Overall, our clothes dryer service incidence is slightly more than five service calls for every 100 dryers sold nationally. In one measured block of 1,000 sales, we had 13 service calls, most of which were minor operating adjustments."

Company Formed To Produce Warm-Air Heaters

A new company, The Wanson Corp., Lewistown, Pa., has been formed to manufacture and sell Thermobloc industrial and commercial warm-air heaters, under license from Establishments Wanson, Brussels, Belgium.

Officers of the newly-formed company are Harry L. Siegel, president; G. Clifford Rice, vice president; Stanley H. Siegel, secretary; and John T. Rodgers, treasurer.

Conference Session To Highlight ARI Exposition

ARI's 11th exposition of the air-conditioning and refrigeration industry, scheduled for Nov. 2-5 at Atlantic City's Convention Hall, is expected to draw thousands of visitors from all segments of the industry. Announcement has been made of the names of principal speakers for the conference session on Nov. 3. This session will be an innovation with the 11th exposition.

Speakers include Harold J. Humphrey, president, National Assn. of Frozen Food Packers; Arthur S. Goldman, director of market research for House & Home magazine; H. E. Ziel,

Space-Saving French Doors Featured On Latest Frigidaire Oven



A unique wall oven with space-saving French doors is the latest from Frigidaire. The doors require 10 inches less space for opening than the conventional-type door. When one door is opened, the other opens with it.

The homemaker can stand close to the oven for ease of cleaning, or loading and unloading heavy utensils. Shelves and heating units come out, leaving only a porcelain-enameled interior to clean. Radiant broil and heating units are sealed and self-cleaning. The oven is designed to fit into any standard 24-inch cabinet or wall section.

an associate of Albert Kahn Assoc. Engineers & Architects, Detroit, Mich.; and Joseph Rorick, assistant for planning and construction, International Business Machines.

The exposition committee includes R. H. Luscombe, Penn Controls, Inc.; Paul M. Augenstein, Airtemp Div., Chrysler Corp.; R. H. Israel, Virginia Smelting Co.; B. E. James, McQuay, Inc.; M. M. Lawler, Worthington Corp.; J. A. Mulcahey, Dunham-Bush, Inc.; Austin Rising, York Div., Borg-Warner Corp.; R. K. Serfass, Westinghouse Electric Corp.; W. A. Siegfried, Superior Valve & Fitting Co.; R. L. Tyler, Jr., Tyler Refrigeration Corp.; and George E. Mills, Air-Conditioning & Refrigeration Institute.

Stanley Works Starts West Coast Construction

Construction of a new office and warehouse for The Stanley Works in Crocker Industrial Park, adjacent to San Francisco, Calif., was announced by John C. Cairns, president of the New Britain, Conn. firm. The 45,000 square foot, one-story building is part of The Stanley Works' regional expansion program.

Robertshaw-Fulton Researchers Move to New Location

Personnel of Robertshaw-Fulton Controls Co.'s Eastern Research Center have moved into a newly-built, modern building in suburban Philadelphia. Designed to accommodate a staff of 100, the building is completely equipped for research and development work and performance testing. William M. Harcum is general manager of the research center.

Hamilton Manufacturing Co. Expands Office and Plant Facilities



Construction work on the office and plant of the Hamilton Mfg. Co., Two Rivers, Wis., is in full force. New factory space will consist of three more floors, providing about 10,000 square feet of floor area. The construction will permit changes in line processes and provide more storage space for dryers, one of the appliances the company produces.

Dole Valve Opens Canadian Plant

The Dole Valve Co. of Canada, Ltd. has opened a new plant in Oakville, Ontario. The plant will manufacture a complete line of valves and controls for the appliance industry. Harold S. Beddoe is general manager, and Andrew L. Goodrich is sales manager of the company. The decision to form a Canadian subsidiary of Dole Valve came after a thorough study of present and future Canadian markets.

Record First Half Reported In Stainless Steel Production

Both production and shipments of stainless steel set alltime records in the first half of 1959, according to a report issued by the Committee of Stainless Steel Producers, American Iron & Steel Institute.

Shipments of 390,133 net tons represented a 71-per cent increase over the 227,959 tons reported for the first six months of 1958. Stainless steel ingot production totals of 739,764 tons was 95-per cent higher than the 379,179 tons reported in the first half last year.

The previous record occurred in the first half of 1956, when the industry produced 614,291 tons and shipped 365,355 tons of stainless steel.

Porcelain Enamel On Steel

Homes Aim of Ferro, U.S. Steel

U. S. Steel has joined with Ferro Corp., Cleveland, in a program to design and construct pilot models of porcelain enamel on steel homes, according to an announcement by Dr. James B. Austin, administrative vice president, research and technology, U. S. Steel.

Dr. Austin stated that the homes

Perfect-Line Starts Expansion Program



President Alfred Robbins of Perfect-Line Mfg. Corp., Hicksville, L.I., points to metal items being painted by an electrostatic spraying process at his firm's recently opened factory in the Hicksville Industrial Park. The electrostatic spray equipment is part of the new machinery acquired in Perfect-Line's expansion program launched this summer.

are to be available at the lowest possible cost. "In skyscraper and industrial architectural applications, porcelain enamel on steel has proved to be aesthetically pleasing and easy to maintain. But homes utilizing this material are not presently available to the home owner," he added.

Applications that are being considered in the homes include exterior walls, roof panels, and interior bathroom and kitchen walls. The architectural firm of Carl Koch & Assoc., Cambridge, Mass., has been retained by Ferro to design the homes. Fenestra Inc., Detroit, will supply porcelain enameled components.

Seaporcel Gets Navy Contracts For Mufflers

Contracts and orders expected to exceed \$500,000 in the next 10 months for king-size mufflers have been entered into by the U.S. Navy and Seaporcel Metals, Inc., producers of porcelain enamel metal products, according to Benjamin B. Loring, president of Seaporcel.

The king-size mufflers, used by the Navy for submarines, landing craft, ice-breakers, and other craft, are many feet

in length and circumference and in some instances weigh as much as 1500 pounds. The mufflers are finished with a special ceramic coating, which provides a heat and acid-resistant surface, giving the material a longer life and reducing maintenance and replacement costs.

Acme Steel Opens New Plant

Acme Steel Co. formerly inaugurated its \$33,000,000 steelmaking plant on July 9. The plant is located in Riverdale, Ill., a suburb of Chicago. Steel will be produced by a combination of the continuous hot-blast cupola and the top-blown oxygen converter.

Metal Exposition Scheduled

"Materials and Fabrication Preview of the Soaring Sixties" will be the theme of 375 exhibits at the 41st National Metal Exposition staged by the American Society for Metals, Nov. 2-6 in Chicago's International Amphitheatre.

Attendance is expected to reach 5,000. Among the recent developments which should generate much interest are high-strength steels, composite materials, super-thin stainless steel, and the latest in vacuum melting equipment.

AHLMA Dictionary Standardizes Home Laundering Terminology

Confused about whether to spell the word as "drier," "dryer," or "automatic dryer"? The American Home Laundry Manufacturers' Assn. has solved the problem with the publication of a dictionary of home laundering terms.

Prepared as a project of AHLMA's Home Economics committee, the terms have been approved by all laundry appliance manufacturer members of the association. Home economists from allied laundry aid manufacturers also cooperated in the preparation of the home laundering terminology.

Magnesium Assn. Meets

The Magnesium Association's 15th annual convention, to be held in New York City's Hotel Roosevelt on October 19-20, will present papers by the leading figures from both producing and fabricating organizations.

In announcing subjects and speakers, Jerry Singleton, executive secretary of the association, said, "Space age technology has found in magnesium the same vehicle that steel provided for the technology of the Industrial Revolution."

PEI Shop Practice Forum To Be Held Nov. 4-6

Thirty-six papers will be presented at Porcelain Enamel Institute's 21st Annual Shop Practice Forum November 4-6 at Ohio State University, Columbus, Ohio. According to J. B. Willis, Pemco Corp., Forum Committee chairman, theme of the event will be "Improved Processing—Key to Greater Profits." Professor R. M. King, OSU's Ceramic Engineering Dept., is Forum director. (See *Advance Program*, Page 73, *This Issue*.)

Bouve Named To ARI Post

Warren L. Bouvé has been named to the position of secretary, products sections, of the Air-Conditioning & Refrigeration Institute. He will take over some of the duties left open by the resignation of Mary Jane Stewart, assistant director of ARI, on August 31.

New Plant For Controls Co.

The Controls Co. of America has established a plant in Winamac, Ind. for introduction and testing of new methods of conveyORIZED assembly, according to an announcement by Louis Putze, president.

He added that the new facility is de-



"Man... do we
save money using
APEC FRITS!"



american porcelain enamel company
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**DON'T BUY SUB-FRACTIONAL
H.P. ELECTRIC MOTORS
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SpeedWay**



Our modern manufacturing facilities and engineering know-how has saved hundreds of companies thousands of dollars annually. We want to work with you—for you—to design the quality motors you require and at your price. Write, wire or call for complete catalog.

Thor
SpeedMotors

SpeedWay Mfg. Co.
Division of Thor Power Tool Co.
LaGrange Park, Ill.

signed to help take care of expanding operations at North Manchester, Ind., where the company's cycle-set power timer for home laundry appliances is manufactured.

United Wallpaper Profits, Sales Up

United Wallpaper, Inc., a principal manufacturer of industrial coatings and finishes as well as trade-type paints, announced substantially-increased sales and profits for the fiscal year ended June 30, 1959.

Net sales, as reported by S. U. Greenberg, president of the company, were up from \$40,897,000 in 1958 to \$46,954,000 for the current year, an increase of 15 per cent. Net profits before federal income taxes increased 21 per cent from \$4,025,000 in '58 to \$4,883,000 in '59.

Westinghouse Offers Hawaii Trip To Spur Dishwasher Sales

Westinghouse will spur dealer sales of a new "Roll About" portable dishwasher with a full program of national advertising and "Hawaiian Holiday" trips as dealer incentives during the latter part of this year. F. A. Lowery,

manager of the Westinghouse kitchen utilities department, reported that dealers reaching their quotas by Dec. 16 will win the Hawaiian vacation.

Hydronics Kit Offered

A sales aid kit, designed to support increasing interest in the home hydronic market, is now available from the Permaglas Div., A. O. Smith Corp., Kankakee, Ill. It includes a four-color consumer brochure on hydronics, a bulletin on the new Permaglas home boiler line, and a technical specification sheet.

Expansion Begun On Texas Instruments Plant

Expansion of the Versailles, Ky. plant of Texas Instruments, Inc. has already begun, according to E. O. Vetter, vice president in charge of the Metals & Controls Div. The addition will increase by one-third the manufacturing space. Occupancy is scheduled for November.

The Commercial Controls Department, which occupies the plant, produces overheat protectors for electric motors, motor starting relays, and thermostatic controls used in electric appliances and in heating and refrigerating equipment.

Reynolds, DuPont Offer New Enamel-On-Aluminum Finish

A new enamel-on-aluminum finish for mobile home exterior panels was unveiled by Reynold Metals Co. and DuPont at the fifth annual Indiana Mobile Home Show. The finish, an acrylic baked enamel, will be offered as part of Reynolds' line of mobile home sheet in coiled or flat form.

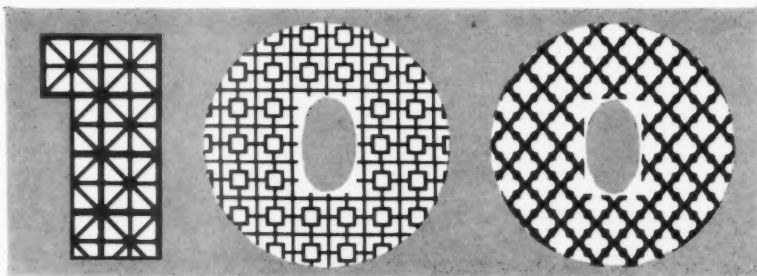
According to Joseph H. Wray, Reynolds director of "Colorweld" products, this is the first acrylic ever roller coated on strip for subsequent forming. It is available in six colors, with one or both sides painted in the same or different colors.

Appliances Get Smaller Share Of Consumer Dollar

Although she needs more new appliances than ever before, the consumer spends a small percentage of the disposable dollar on such products than she did five years ago. This is because exaggerated price merchandising has frightened her away from them. These facts lay behind a call for retailers to return to selling the product instead of its price that was made by John W.

to Page 70 →

for more than



pleasing patterns

LOOK TO HENDRICK PERFORATED SCREENS

FUNCTIONAL • DECORATIVE • ECONOMICAL

Increase your product's attractiveness — and sales by including a Hendrick Perforated Screen in your design. You can select from hundreds of attractive designs in commercially rolled metals and gauges . . . or in masonite, rubber, plastic, or insulated board. You can

choose from many different sizes and shapes, with either plain or panel effects. Hendrick perforated screens are made by the Pioneer of Perforated Metals, and backed by years of experience and modern manufacturing facilities.

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Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Hendrick Wedge Wire Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids • Hydro Dehazers • Distillation Column Internals

FERRO PIONEERS

new equipment and processes to reduce porcelain enameling costs

Want to use lighter gauge or lower cost metal? Ferro engineers can probably help you do it.

Want to reduce material handling in your whole finishing operation? Ferro engineers can definitely do this.

Want better, more highly mechanized facilities for metal preparation, or storing and handling of the "slip"? Or again, cost-cutting equipment for spraying or dipping? *Ferro engineers have what you need*, have made such installations, and will guarantee that what they recommend will work well for you.

Ferro's Engineering Division pioneered most of the mechanical advances that today make porcelain enameling a high-production, low-unit-cost finishing process. They've been doing this for 38 years, and now have more to offer that's *significantly new* than at any time in their history.

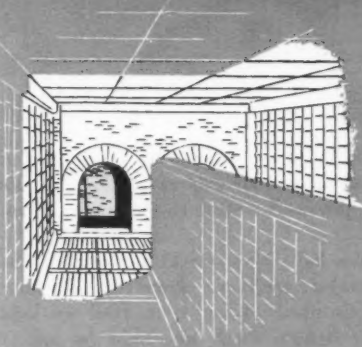
Maintaining satisfactory profits in business usually requires staying a step ahead—or at least even with competition in product quality and costs. If porcelain enameling is involved in the production of your products, we are confident we can help you. Where and when can we talk?



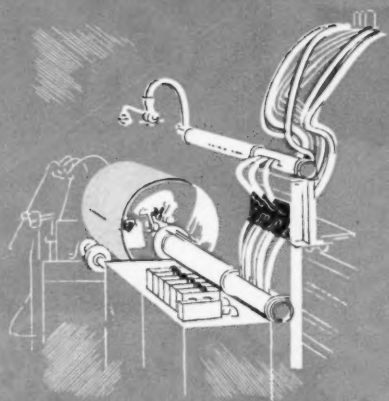
FERRO CORPORATION

Engineering Division

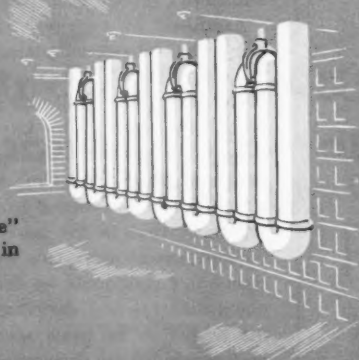
4150 EAST 56TH STREET • CLEVELAND 5, OHIO



FIRST "U-Type" Continuous Furnace built in 1927, for Enamel Products Co.
...by Ferro

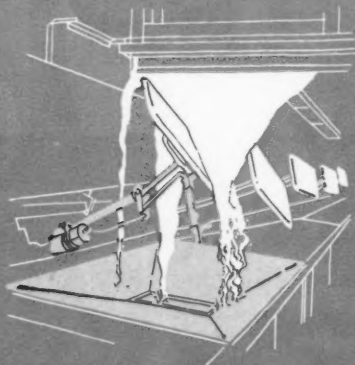


FIRST Fully-automatic Spray Equipment for water heaters built in 1955, for Rheem Mfg. Co.
...by Ferro

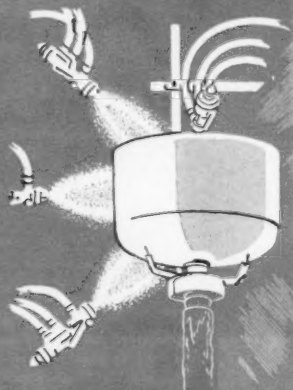


FIRST "Radiant-Tube" Continuous Furnace built in 1937, for Newark Stove Co.
...by Ferro

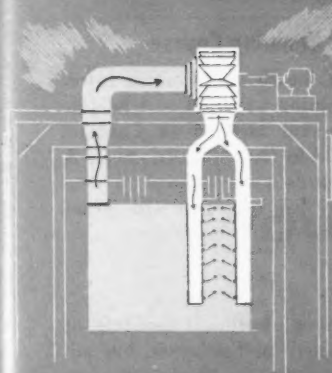
DID YOU KNOW?



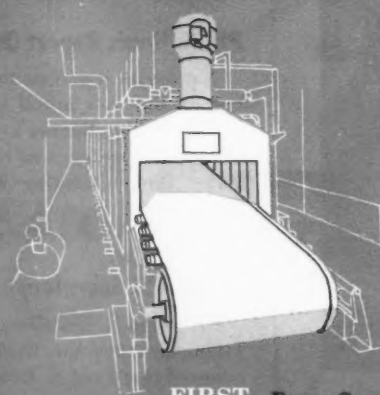
FIRST Fully-automatic Flow Coat Machine built in 1955, for General Electric Co.
...by Ferro



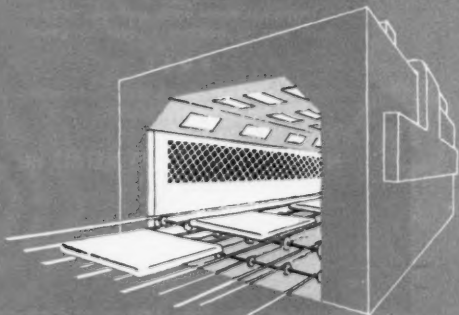
FIRST Fully-automatic Spray Equipment for washing machine tubs built in 1956, for Maytag Co.
...by Ferro



FIRST Porcelain Enameling Furnace with convected preheat air-current system built in 1956, for Porcelain Steel Corporation
...by Ferro



FIRST Ferro-Curran Automatic Spray Pickling Machine built in 1958, for American Radiator & Standard Sanitary Corporation
...by Ferro



FIRST Gas-Fired Infra-red Porcelain Enamel Drying Oven built in 1959, for Murray Manufacturing Co.
...by Ferro

ECONOMY and PRECISION in POWDERED METAL PARTS by NORWALK

QUALITY CONTROL from blueprint to finished machine part. Specified strengths and tolerances are maintained from the first part to the millionth.

ECONOMY. Mass production brings the unit cost down for important savings.

SERVICE. Whether delivery requirements are routine or "emergency," we have the flexibility to meet your schedules.

DESIGN. Our Design Engineers employ powdered metallurgy at its maximum potential: to produce precision parts that do the job . . . with important economies in fabrication.

Submit your metal parts problems to us for study and suggestions without obligation.

FREE

Write for information folder, "Converting Powdered Metal into Machine Parts".

NORWALK POWDERED METALS, INC.
8 Muller Park, Norwalk, Conn.

Industry news → from Page 67

Craig, Westinghouse vice president and general manager of its Electric Appliance divisions. He addressed the Institute of Management for Appliance-TV dealers at the American University.

"While appliance sales have gone up 11 per cent in the past five years, the major appliance share of consumer spending has actually dropped 14 per cent. Had we kept our share of consumer dollars level, we could be selling double the number of dryers and electric ranges or 2,000,000 additional refrigerators annually," Craig stated.

Confused by exaggerated price merchandising, the consumer has channeled more and more of her dollars into leisure time purchases, he added. In addition to urging the dealers to return to selling quality and features, he suggested they enter the kitchen remodeling business on a full-scale basis. He indicated his belief that the opportunity for price stability in appliances would be at its peak in the next few years. Normal growth would "soak up the excess capacity" that in the past contributed to over-production, unemployment and price wars, he said. As proof that such economics contribute to dealer downfall as well as hurting manufacturers and distributors, he cited the fact that since the addition to price merchandising became widespread in the mid-fifties, the annual rate of appliance dealer failures has doubled.

New Direct-On Porcelain Enameling Process Utilizes Citric Acid

A new direct-on porcelain enameling process adaptable to existing plant facilities will be introduced to the porcelain enameling industry in November by Chas. Pfizer & Co., Inc., 110-year-old chemical and drug manufacturer. The new system which utilizes citric acid in the pickle bath instead of sulfuric acid is known as the Ray-Davis Process.

According to Pfizer, pickling steel in citric acid leaves the surface of the steel in such a condition that the cover coat enamel can be applied directly to the steel. Bond and finish characteristics are reported to be excellent, "equal to, and in many instances superior to, the bond and finish obtained using the double-coat application."

The Ray-Davis Process, Pfizer indicated, "has been tested under both laboratory and plant conditions. It is easily and completely adaptable to present plant facilities and has been found to be economically sound."

Original research on the new process was done by William G. Ray of Pfizer and Shipp C. Davis of the Daco Corp., Chattanooga, Tenn. Further developmental work was carried out under Pfizer's sponsorship.

PHCIB Hears Report On Sales Training Course

A progress report on the Plumbing-Heating-Cooling Information Bureau's initial sales training program will be presented at the Bureau's membership meeting in Chicago, Oct. 1. The course was completed in Dubuque, Ia., Sept. 3, and a dinner meeting with awards presentations to contractors who finished the course was held Sept. 16. Plans are underway for starting the course in other cities.

Name WSE Secretary

Dr. John T. Rettaliata, president of Illinois Institute of Technology and the Western Society of Engineers, has announced that Fred R. Bruce will be the new Western Society secretary.

Shearing to size
at the John Zink Company.
This major heater manufacturer
uses Youngstown Cold-Rolled
Sheet for both forced warm air
heater cases and combustion
chambers, consistently
gets specified quality.



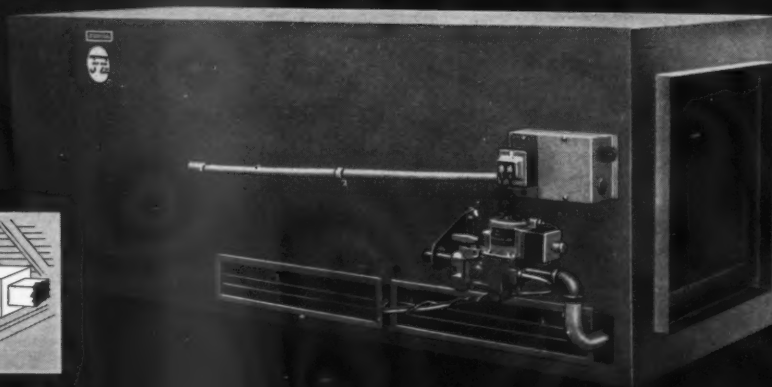
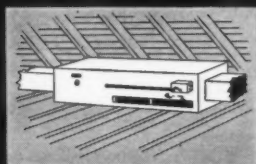
Accent on Excellence

Youngstown cold-rolled sheets

Modern home buyers get more living space for their money with this horizontal-type heater produced by the John Zink Company, Tulsa, Oklahoma. It installs in "dead space"—in the attic, in a crawl space, or suspended from the basement ceiling.

Both the combustion chamber and attractive, clean-lined cabinet are

JZ

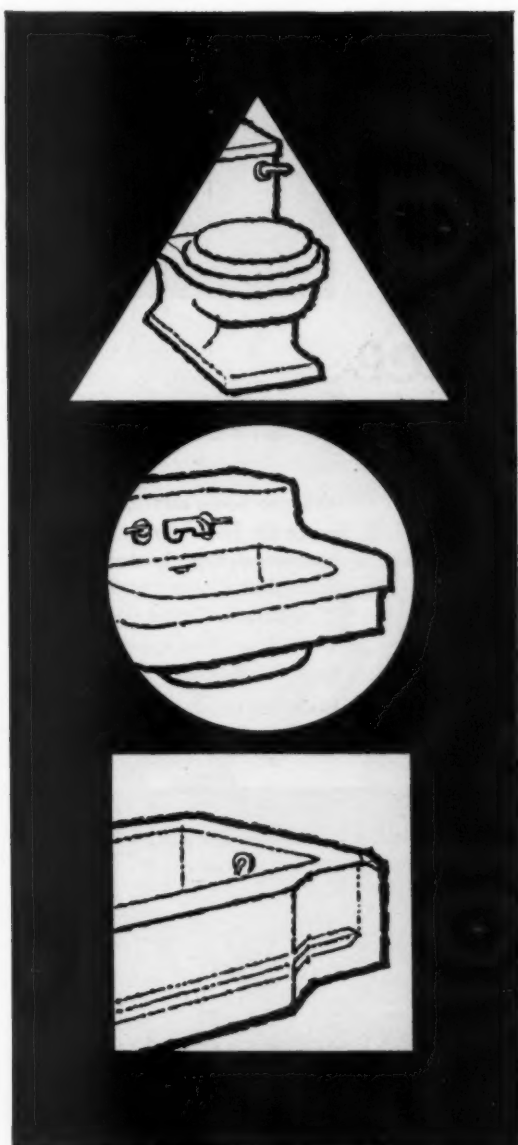


fabricated in Youngstown Commercial Quality Cold-Rolled Sheet. This Youngstown steel consistently meets John Zink's rigid specifications, while it forms fast, extends die life, minimizes rejects.

Wherever steel becomes a part of things you make, the high standards of Youngstown quality, the personal touch in Youngstown service will help you create products with an "accent on excellence". The Youngstown Sheet and Tube Company, Youngstown, Ohio. Carbon, Alloy and Yaloy Steel.

Youngstown





Colors that MATCH in any light, on any fixture

Colors that change with the lighting or from fixture to fixture can cost you customers.

Play it safe. Standardize on FERRO colors.

We can supply them for all ceramic processes—wet or dry process porcelain enamels and ceramic

glazes. They're formulated to match each other—look completely *right*—under any lighting.

Ferro's experienced technicians can take the guesswork out of color problems. How about letting them work for you?



FERRO CORPORATION
Color Division

4150 EAST 56TH STREET • CLEVELAND 5, OHIO

CANADA: FERRO (CANADA) LTD., OAKVILLE, ONTARIO

Check Ferro first for ceramic engineering, dryers and kilns, glaze frits and colors, and production supplies.

ADVANCE PROGRAM

21st Annual PEI Shop Practice Forum
November 4-6, 1959, The Ohio State University, Columbus, Ohio

WEDNESDAY, NOVEMBER 4 — Morning Session

10:00 A.M. — REGISTRATION
10:30 A.M. — COMMITTEE MEETINGS
12:00 Noon — LUNCHEON

Afternoon Session

1:30 P.M. — ADDRESS OF WELCOME, Official of The Ohio State University
1:45 P.M. — RESPONSE, PEI Official
2:00 P.M. — PROCESSES AND EQUIPMENT
— Automatic Sorting
C. D. COLE, Specialties Inc.
— Memory Spraying Equipment
G. H. COOK, Binks Manufacturing Co.
— Flow Coating Equipment
J. B. VERNETTI, Chicago Vitreous Corp.
— Flame Spraying
R. J. WESTERHOLM, Norton Co.
— Mill Preparation of Colored Porcelain Enamel Slip
L. L. MOSS and L. ROBERTS, Ferro Corp., & P. KATES, California Metal Enameling Co.
— Repaired Bond Behavior of Ground Coat
H. AFFLERBACH, Ingram-Richardson, Inc.
3:15 P.M. — DISCUSSION SESSION ON PROCESSES AND EQUIPMENT
3:45 P.M. — INTERMISSION
4:00 P.M. — SYMPOSIUM ON ENGINEERING PROPERTIES OF PORCELAIN ENAMEL
— Definition and Description of Porcelain Enamel Products
R. H. PATRICK, Pemco Corp.
— Where the Properties Can Be Used on New Products
W. E. PIERCE, Porcelain Enamel Institute
4:30 P.M. — DISCUSSION SESSION ON ENGINEERING PROPERTIES OF PORCELAIN ENAMEL
4:45 P.M. — ADJOURNMENT

THURSDAY, NOVEMBER 5 — Morning Session

9:30 A.M. — SYMPOSIUM ON ONE-COAT ENAMELING
— Conversion to One-Coat Porcelain Enameling
R. L. HADLEY, General Electric Co., & H. TRIPP, Gulton Industries, Inc.
— One-Coat White Process
J. C. SWARTZ, Westinghouse Electric Corp., & T. STALTER, Pemco Corp.
— New Steel Developments for One Coat Applications
R. L. MYERS, Armco Steel Corp.; M. B. GIBBS, Inland Steel Co.; J. K. MAGOR, U. S. Steel Corp.; & DR. D. L. BLICKWEDE, Bethlehem Steel
— Pickling Acids
J. M. ZANDER, Chicago Vitreous Corp.
10:30 A.M. — DISCUSSION SESSION FOR ONE COAT ENAMELING
10:50 A.M. — INTERMISSION (10 Minute Coffee Break)
11:00 A.M. — CURRENT PEI TECHNICAL PROJECTS
— PEI-NBS Weathering Test Program
A. POTTER, Porcelain Enamel Institute
— PEI Architectural Color Guide
R. H. SPENCER, JR., The Erie Enameling Co.
— PEI Architectural Specifications for Porcelain Enamel on Steel
E. F. McDONALD, Ina-Rich Mfg. Co.
— Report on Revision of PEI Ball Mill Grinding Manual
J. A. MORRIS, Coors Porcelain Co., & H. C. WILSON, Vitreous Steel Products Co.
— Report on Distinctness-of-Image Theory and Apparatus
J. C. RICHMOND, National Bureau of Standards
11:30 A.M. — DISCUSSION SESSION FOR PEI TECHNICAL PROJECTS
12:00 Noon — ADJOURNMENT
12:05 P.M. — GROUP PHOTOGRAPH
12:15 P.M. — GROUP LUNCHEON

Afternoon Session

1:30 P.M. — BASE METALS AND PREPARATION
— Experiences in Welding of Cold Rolled Steel
J. A. SCHIEFFERLE & D. B. TOLLY, General Electric Co.
— Porcelain Enameling Stainless Steel
A. E. FARR, The O. Hammel Co.
— Testing Metals Before Fabrication of Parts
L. L. JAFFE, Frigidaire Div., General Motors Corp.
— The Mechanical Properties of Porcelain Enamels
A. L. SOPP, Aluminum Co. of America
— Additional Paper — Title to be Announced
Speaker to be Announced
— Cleaner Evaluation
W. T. WEST, Pensalt Chemical Corp.
2:45 P.M. — DISCUSSION ON BASE METAL AND PREPARATION
3:15 P.M. — PROCESS CONTROLS AND TESTS
— Shop Procedures for Checking Balances, Efficiency and Deterioration of Enameling Furnaces
S. C. BURKHALTER, Lindberg Engineering
— Automatic Combustion Controls for Porcelain Enameling Furnaces
R. J. REED, North American Mfg. Co.
— Method for Testing Fracture Resistance of Porcelain Enamel
J. A. SCHIEFFERLE and D. B. TOLLY, General Electric Co.
— Firing at Different Humidity Levels For Control of Enamel Defects
B. SWEQ, Ferro Corp.
— The Determination of Chromium Deposition When Applied to Aluminum
F. E. ALLENBAUGH, Ferro Corp.
4:00 P.M. — DISCUSSION ON PROCESS CONTROLS
4:30 P.M. — ADJOURNMENT
6:30 P.M. — RECEPTION AND ANNUAL FORUM BANQUET
Deshler-Hilton Hotel

FRIDAY, NOVEMBER 6 — Morning Session

9:30 A.M. — GENERAL INTEREST SYMPOSIUM
— Observations on the Porcelain Enamel Industry
J. J. SVEC, Ceramic Industry
— Some Observations on Physical Properties of Porcelain Enamel
J. E. COX, The O. Hammel Co.
— Electroluminescent Enamels
F. A. WOLFE, Sylvania Electric Co.
10:30 A.M. — INTERMISSION
— Experience on Aging of Titanium Cover Coats
M. W. BANISTER, Frigidaire Div., General Motors Corp.
— Experience in Putting Low Temperature Enamels Into Production
G. B. HUGHES & R. J. BAKER, Frigidaire Div., General Motors Corp.
11:45 A.M. — GENERAL INTEREST DISCUSSION
1:00 P.M. — ADJOURNMENT

Appliance Styling

→ from Page 27

a "built in" just as individual appliances are built in.

The "Nautilus" package kitchen has a spiral-shaped floor plan and incorporates the complete mechanical core for a house or apartment, including all stationary bathroom and kitchen fixtures. Complete aluminum plumbing and laundry appliances are located to serve both kitchen and bath with an aluminum hot water heater as an integral part of the system. Aluminum wired lighting and appliance circuits are included in the package core.

A central heating, air conditioning and filtering system supplies the climate control for all living areas. Air moves through an aluminum sheet duct system within the "Nautilus" curved walls with outlets and return grilles located along the base areas of the walls. Aluminum coils heat and cool the air and electrostatically-charged aluminum plates filter out dust and pollen.

There are many individual appliances in the styling presentation. Like the package kitchen units, they are designed to demonstrate aesthetic as well as structural qualities. The aluminum in a variety of colors and finishes is employed with such other materials as plastics, wood and ceramic surfaces.

While this is the first such presentation prepared by the Industrial Design department for the appliance industry, Kaiser Aluminum has in the past successfully applied the imaginative styling approach to other fields, including automotive and office furnishings. The company states that the objective is not to attempt to influence specific design trends but simply to suggest new areas in which aluminum may be used to greater advantage.

**GIVE THE
UNITED WAY . . .**

through your

**UNITED FUND or
COMMUNITY CHEST**



help more people . . .

save more lives . . .



MILLS PRODUCTS • Incorporated
Manufacturers of Sealed OVEN DOOR WINDOWS
PERMA-VIEW

Telephone:
MARSH 4-1981

1015 WEST MAPLE ROAD
WALLED LAKE, MICHIGAN
August 4, 1959

Mr. Dana Chase, Jr.
METAL PRODUCTS MANUFACTURING
York Street at Park Avenue
Elmhurst, Illinois

Dear Mr. Chase:

I am happy to tell you that for the period ending June 30, representing the ninth consecutive year that we have advertised PERMA-VIEW windows continuously and exclusively in your publication, our sales figures show a fine increase over the preceding year. As you know from the previous reports I have sent to you, each succeeding year has shown a fine increase over the preceding year (including 1958). Therefore I will give you a summary, without attempting to detail each year.

At the end of one year -- 100% increase in number of accounts served.
At the end of three years -- 400% increase in sales and a new plant.
At the end of five years -- 1302% increase (from start of campaign).
At the end of seven years -- a gain of 2053%.
At the end of nine years -- a gain of 3275%.

Starting with five customers before we started advertising, we now have 83 in the United States, Canada and other countries. This represents the majority of the manufacturers of free-standing and built-in gas and electric ranges in the United States and Canada.

The fact that our business went up in 1958, when the range business in general was down, was proof of the increased use of PERMA-VIEW oven windows in proportion to total range production. Following this trend, our first six months of 1959 shows a 65% gain over the first six months of 1958.

PERMA-GRIP door handles, introduced in MPM in the June, 1957 issue of MPM, received such heavy response that we discontinued the advertising, pending increase in production. We now plan to reinstate our advertising on this new product in the near future, in addition to continuing our campaign on PERMA-VIEW windows.

As you can see, we are still quite happy with our choice of an advertising medium to reach the appliance industry and the results we obtain from year to year.

Cordially yours,

MILLS PRODUCTS, INC.

Herbert E. Mills
Herbert E. Mills
President

STOVE HANDLES

OVEN DOOR WINDOWS

CHROME TRIM

SERVING THE *Appliance* AND

a 9 Year Story of Advertising / **RESULTS!**

**INCREASE
IN SALES
3275%
AND IN
CUSTOMERS
1560%**

A CASE HISTORY OF PERMA-VIEW
OVEN DOOR WINDOWS AS PRODUCED
AND SOLD BY MILLS PRODUCTS, INC.
AND ADVERTISED
EXCLUSIVELY IN **MPM**

Here is one of the rare instances where advertising results can be definitely measured...because...Mills Products, Inc. travels no field men, all contacts being made by the principals from the factory...and...MPM is the only advertising medium used for promoting PERMA-VIEW windows.

The first PERMA-VIEW advertisement appeared in July, 1950. Mills Products, Inc. carried a continuous campaign of one black and white page each month for five years, except for an occasional two-color spread. The current advertising program in MPM includes black and white bleed pages, two-color bleed pages and two-color bleed spreads.

What have been the results of this continuous campaign?

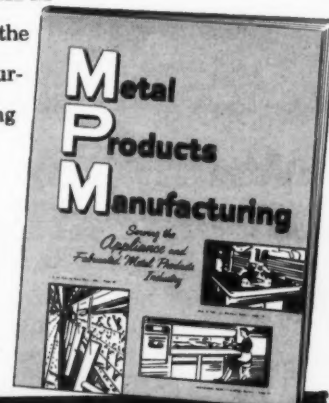
The accompanying letter details the increases in sales at the end of one, three, five, seven, and nine years compared with the year immediately preceding the start of advertising. A 3275% increase in sales and an increase from 5 to 83 customers in the volume producing range industry represents positive proof of advertising results.

Here is POSITIVE PROOF that if you have the right material, equipment, component or service for the appliance and fabricated metal products manufacturing field...and present it properly in MPM

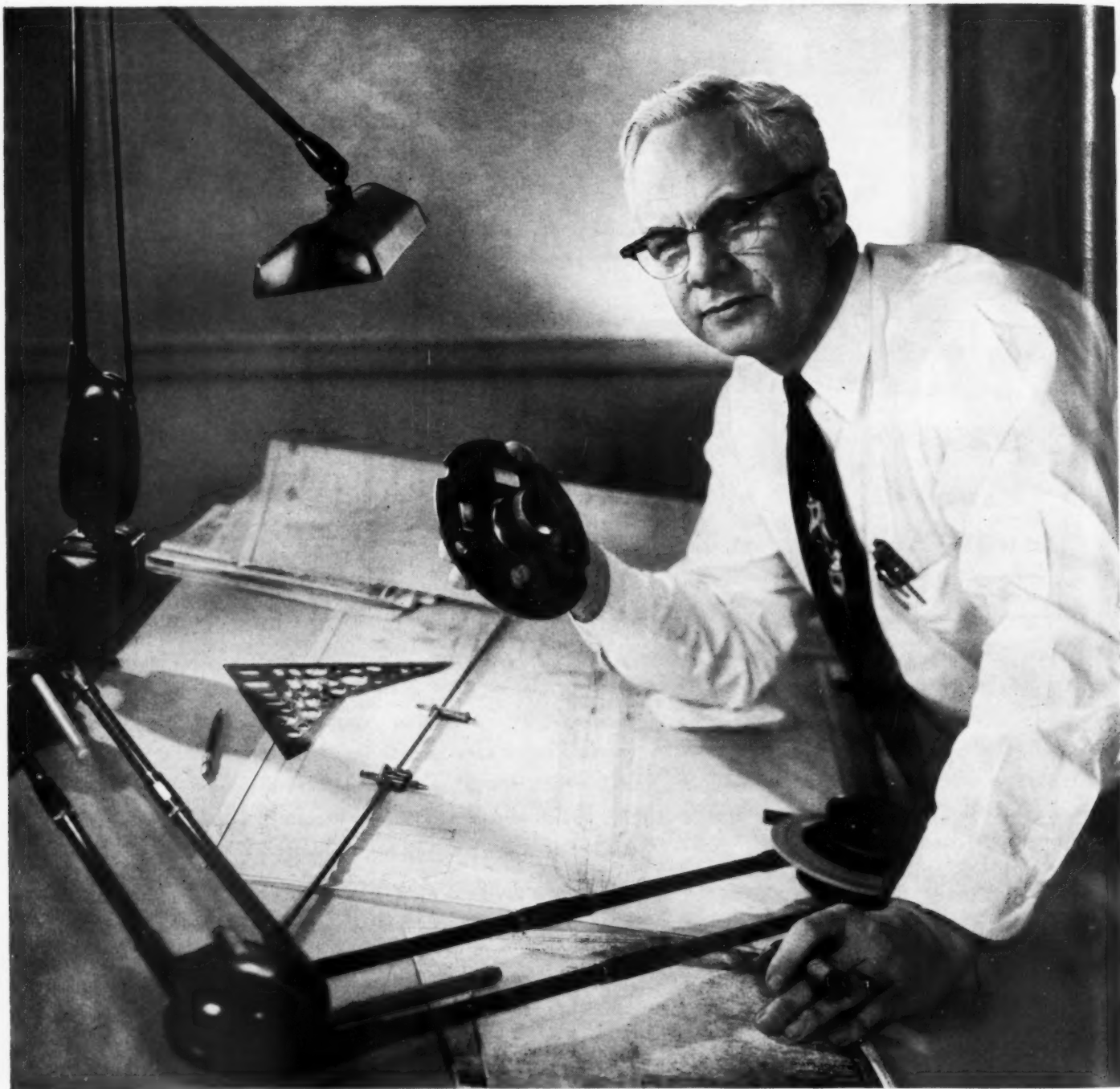
...the men who engineer and build the metal products, plus those who purchase for and manage the producing plants, will respond.

Dana Chase PUBLICATIONS, INC.

Elmhurst National Bank Building • York Street at Park Avenue • Elmhurst, Illinois
TErrace 4-5280



AND FABRICATED METAL PRODUCTS INDUSTRY



**"When you design for quality
the steel is important"**

—ALBERT R. COLEMAN—DIRECTOR OF ENGINEERING

"Steel quality is all important to the designer," says Albert Coleman, Director of Engineering at Whirlpool's Clyde, Ohio plant, "and we've found we can trust Sharon to deliver what they promise."

Sharon engineers know the importance of working in close coordination with engineers like Mr. Coleman to thoroughly understand the application and then make certain the steel supplied will do the job for which it was intended.

Better appliances depend on steel. Leading appliance makers, like Whirlpool, have learned they can depend on quality steels—consistently—from the mills of the Sharon Steel Corporation, Sharon, Pa.



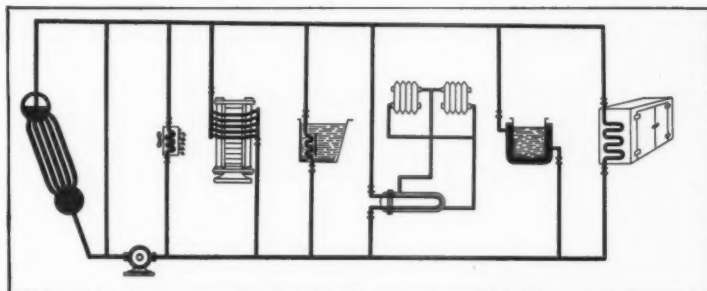
SHARON *Quality* **STEEL**



Engineered
Atmospheres
for Better
Processing



Ross metal decorating baking oven



Schematic layout of typical Supertherm high pressure water system to replace uneconomical existing process and comfort heat system



Ross foam rubber curing oven

Modernization

...THE ANTIDOTE FOR A POISON AFFLICTING MANY COMPANIES

The poison? Obsolescence! The use of a machine that is past its 'point of no return' may not show up too strongly in your unit cost structure now but its cumulative effect is devastating. It's slow poison... slowly sapping the production strength of the user. The longer an obsolete unit remains in service the greater is the unit cost gap between the old and what a modern unit would do. If you have obsolete equipment you are in a slowly deteriorating competitive position.

OPERATIONS WHERE MODERNIZATION WILL PAY OFF!

Paint Finishing • Washing,
Drying, Baking, Curing
• Conversion Operations •
Process Heating • Air Heating
• Air Distribution; Fans; Ducts;
Nozzles • Industrial Air
Conditioning • Heat Recovery

Any process that needs its components brought up to date so that they conform to the modern practices and make use of the latest in design.

Why not check all operations in your plant that directly or indirectly involve what we call the 'Engineered Atmosphere'? Ask a Ross Specialist to make a study of the systems, equipment and auxiliary units to determine just what is obsolete. He will submit a detailed report as to which should be modernized to bring about the greatest reduction in unit costs. His report will be based on his broad knowledge of 'Engineered Atmospheres' and years of experience in designing the equipment and systems noted in the accompanying list.



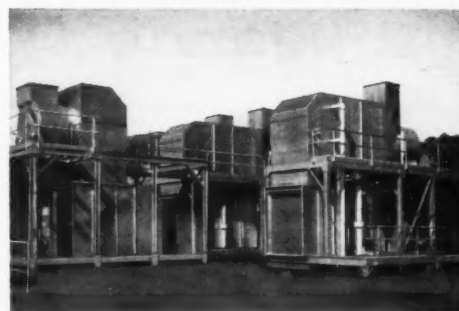
THE MIDLAND-ROSS GROUP OF COMPLEMENTING SERVICES

J. O. Ross Engineering, New York
John Wildman Corporation, New Brunswick, N. J.
Andrews and Goodrich, Boston
Ross Engineering of Canada Limited, Montreal
Ross Midwest Fabric, Dayton
Worthing Extruders, Mount Laurel, N. J.
Former Ross Engineering Company, Ltd., Toronto

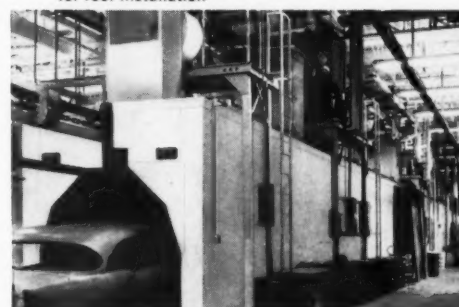
J. O. ROSS ENGINEERING

Division of Midland-Ross Corporation

730 Third Ave., New York 17, N.Y.
ATLANTA • BOSTON • MT. PROSPECT, ILL.
DETROIT • LOS ANGELES • SEATTLE



Ross-Briner economizer; aluminum construction for roof installation



Ross paint finishing oven



Resin core stock oven

Thirty-nine story Tishman Building has better than eight acres of curtain wall construction with each window and spandrel separated by building-high, 20-inch wide, white porcelain enameled aluminum strips...made brilliant and durable through the use of lead. Carson & Lundin, Architects.

LEAD Adds Brilliance on Fifth Avenue



A new addition to New York's beautiful Fifth Avenue... the Tishman Building...uses porcelain enameled aluminum to accent its vertical lines. This building is of curtain wall construction with strips of white porcelain enameled aluminum 20-inch wide running its entire height between each row of windows and spandrels. And lead is essential to the production of durable, high quality enamels for aluminum.

The high fluxing power of lead will give porcelain

enamels greater brilliance and smoothness. Lead will also increase elasticity and chemical resistance of the fired enamel. Lead bearing porcelain enameled aluminum panels can be sheared, sawed, punched or drilled on the job with little or no chipping.

It will pay you to investigate the cost-saving and other advantages of lead compounds in your products. More facts are in an attractive, informative booklet called "Lead in the Ceramic Industries." Write for it today.



look ahead with LEAD

Lead Industries Association

60 East 42nd Street

New York 17, N. Y.

ENAMELS
GLASS
GLAZES
COLORS
BODIES

51309

An all-new plant for ceramic coating *(continued from Page 45)*



The parts shown here represent some of the applications for high temperature ceramic coatings. Such applications include jet, rocket, and missile component production. The furnace shown in the background will operate in the range of 1750° - 1900° F., and is fired by six gas or oil burners, and has inside measurements of five feet by ten feet by three feet. It is also used for shapes not suitable for the continuous furnace.

In this laboratory, Bettinger is continuing the research and development programs which dominated the first stages of its ten-year program. Included is work in ultra-high temperature coatings, expected to extend the use of ceramic-coated metals up to 5000° F.



the use of single coat fused ceramic coatings for military applications, is the development of a corrugated siding trade named "V-Corr." This siding is expected to be a major product in the Milford plant. It is currently the major product at Bettinger's Toledo plant. Bettinger estimates the annual market potential for corrugated roofing and siding to be in the neighborhood of \$400 million.

High temperature industrial and military ceramic coatings — A wide range of ceramic coatings are applied to protect metals against heat and corrosion, and erosion and chemical corrosion encountered in space age engines, metal-working, chemical and other severely-corrosive industrial atmospheres. This group of coatings is expected to not only contribute substantially to development of new applications for ceramic coatings, but also to provide considerable volume as the inherent advantages of the special coatings are recognized and applied more widely in industry.

Miscellaneous fabricating and coating — As in the past, Bettinger will continue to apply ceramic coatings to many standard product items of the enameling industry such as bathtubs, service stations, signs and escalator risers. Inter-

estingly enough, this special business permits Bettinger to have more economical equipment for high quality for such items.

The accompanying photographs and flow diagram show the details of the plant. It represents the practical application of the latest techniques in porcelain enameling — but will be constantly improved as Bettinger's research programs come up with new processes, new products, and new applications of the ages-old ceramic coating industry.



COMING FEATURES

DESIGN

THE ULTRASONIC DISHWASHER

FABRICATION

SLITTING AND SHEARING AT THE PHILCO-AVCO OPERATION IN NASHVILLE

PROCESSING METAL TOPS AT ALL-STEEL EQUIPMENT

HIGH FREQUENCY RESISTANCE WELDING

FINISHING

COATING COIL STEEL IN 48" WIDTH WITH A POLYESTER, NON-ORIENTED PLASTIC FILM

MORE ABOUT DIRECT-ON PORCELAIN ENAMELING

IMPROVES FINISH ON STEELCASE DESKS

GENERAL

APPLIANCE SERVICE ORGANIZED FOR PROFIT

METAL-FOAM-METAL SANDWICH FINDS ANOTHER USE

MATERIALS HANDLING AT SPEED QUEEN

ULTRASONICS IN APPLIANCE MANUFACTURING



can you expect

laboratory results

...in production enameling operations?

It is a far cry from the perfect conditions obtained in a laboratory test of any frit to the conditions encountered in actual production enameling operations.

That's why Ing-Rich Plant Tested Frit has considerably lowered reject percentages for Ing-Rich Frit Customers.

You have to know that you cannot approach laboratory conditions in actual production enameling. That's why Ing-Rich topflight ceramic engineers work hand in hand with our trained technical experts in our own job enameling plant . . . offering you not just the result of exhaustive, laboratory test . . . but the final test . . . frits proven under actual production enameling conditions.

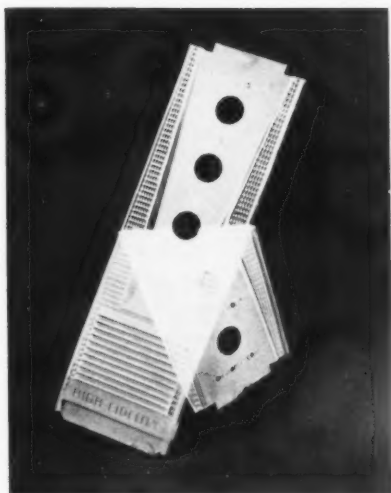
The combination of Ing-Rich practical "know how" and Ing-Rich "Plant Tested" Frits offer you a combination that will insure you better enameling results with proven cost economies.



*Pioneer Producer of
LIFETIME
Porcelain Enamel Products*

INGRAM-RICHARDSON, INC.

**OFFICES, LABORATORY AND PLANT
FRANKFORT, INDIANA**



Strippable coating

DEPENDABLE, INEXPENSIVE protection for the surfaces of metals during and after forming operations is provided by a strippable coating, "Plastisol Clear." It is a polyvinyl chloride resin dispersion in a plasticizer.

The film formed by the material is formulated to safeguard metal against corrosion and marring during metal forming processes, and to remain in place during highly-stressed drawing and punching operations.

The film may be easily removed after operations are completed, or the material may be left on metal parts for removal by the ultimate user to eliminate marring or finger marking during transportation to the point of use.

Finely-machined parts, such as gears, also may be protected against humidity and other hazards in transportation and storage. Removal of the protective film of "Plastisol Clear" is a matter of peeling it off after it has served its purpose.

Film thicknesses may range from 1/2 mil to 10 mils or more, as required. Abrasion and chemical resistance are rated as "excellent," and electrical resistance is 500 volts per mil of film thickness. Calculated coverage is 1,600 sq. ft. per gallon per mil without allowing for losses in application operations. Thus, a gallon theoretically provides 800 square feet of coverage at 2 mils, and 400 square feet at 4 mils.

Complete details on the protective coating will be sent to you if you send your request for "Strippable Coating Information" on your company letterhead to Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

**FASTER . . . CLEANER . . . MORE
ECONOMICAL WHEN YOU PAINT
WITH THE**

RANSBURG

Electrostatic Hand Gun

Gator Boat transport trailers are painted in less than half the time—with half the paint—with the new Ransburg Electrostatic Hand Gun.



For instance

Peterson Bros., Inc., Jacksonville, Florida and Ft. Wayne, Indiana, world's largest manufacturer of boat trailers for the Marine Industry, switched from air hand spray to Ransburg No. 2 Process Electrostatic Hand Gun at the Fort Wayne operation in the finishing of their big custom line boat trailers and their Gator line of Marine Trades Equipment.

Paint saving with the Ransburg Hand Gun is estimated at 50 to 60% over the former method. Construction of their products (they use a lot of tubular steel) is ideal for Hand Gun application because of the "wrap-around" characteristic of Electro-Spray.

Painting is done now in an open spray room where two water-wash

booths stand idle. Not needed! Maintenance in the paint room has been reduced 75%, for where they used to have to clean up the room sometimes twice a week (mostly on overtime) it now goes two or three weeks without cleanup.

One of Peterson's biggest products now painted electrostatically is a boat transport trailer, Model 807, built to haul six 16-ft. runabout boats. The trailers are over 31-feet long; overall height is 11'-2" and almost 8' wide. With air spray, it used to take 8 hours, or more, to paint the big vehicles. Now, with Ransburg No. 2 Process Electrostatic Hand Gun, one operator does the job in only 3 1/2 hours. And, with half the paint!

NO REASON WHY YOU CAN'T DO IT, TOO!

Write for information and literature about this revolutionary, new painting tool. See how the Electrostatic Hand Gun can save time . . . paint . . . and cut costs in YOUR finishing department. If your production justifies conveyorized painting, it'll pay you to investigate Ransburg's automatic electrostatic spray painting equipment. Write for our No. 2 Process brochure which shows numerous examples of modern production painting in both large and small plants.



RANSBURG
Electro-Coating Corp.

Box-23122, Indianapolis 23, Indiana

INDUSTRY PERSONALS

Pacific Electronic Controls Corp., Monrovia, Calif., a subsidiary of Royal Industries, Inc., Los Angeles, has named **Donald C. Duncan** as president of the firm. Duncan, a pioneer executive in the field of precision potentiometers, had been director of contract sales for Beckman Instruments, Inc.

Phillips & Buttorff Corp., Nashville, Tenn., has announced the appointment of **William T. Brent** to sales manager-Gas Range Div. According to Paul Clements, vice president-sales, the appointment of Brent to this post is a part of a sales reorganization plan being put into effect.

Crane Co. has announced the appointment of **Thomas R. Watson** as manager of the Washington, D. C. branch, according to Thomas M. Evans, chairman of the board. He succeeds K. D. Ackad, who has resigned to become a Crane distributor at Falls Church, Va.

Twin Coach Co., a subcontractor in the aircraft and missiles field, has named **Robert Geiger** to the post of project development manager, according to William H. Coleman, president. Geiger was formerly director of engineering planning and tooling.

Timken Roller Bearing Co.'s board of directors has elected **D. A. Bessmer** president of the company to succeed W. E. Umstattd. Umstattd will continue to serve as a director and chairman of the executive committee. Bessmer had been executive vice president.

Link-Belt Co.'s Ewart plant in Indianapolis, Ind. has announced the appointments of **Charles W. Beauchamp** as marketing manager and **Kendrick M. Hickman** as sales manager. Beauchamp will head up all sales activities of the plant. The announcement was made by Richard E. Whinrey, vice president of the company and general manager of the Ewart plant.

BEAUCHAMP



HICKMAN



Cribben & Sexton Co., Chicago, has announced two new appointments. **Robert Walker** has been appointed manufacturing services manager, and **John J. Hayes** has been named national accounts sales manager. Walker was formerly manufacturing services manager at Waste King Corp., Los Angeles. Hayes joined Cribben & Sexton as sales training director in 1957.

Pyle-National Co., Chicago, has appointed **Ernest R. Blomquist** as purchasing agent, according to an announcement by William C. Croft, president. Prior to joining Pyle-National, Blomquist was employed as purchasing agent for the Benjamin Electric Mfg. Co., Des Plaines, Ill.

Rheem Mfg. Co., New York, has named **William E. Spaulding, Jr.** as manager of marketing research, according to an announcement by A. Lightfoot Walker, president. Spaulding will be on the corporate staff and will report to I. G. Davis, Jr., director of planning.



BLOMQUIST



SPAULDING

Northwest Chemical Co. has announced the appointment of **Eugene O. Eagle** as their representative for the states of Virginia, North Carolina, and South Carolina.

Clearing Div. of U.S. Industries, Inc. recently named **William Roorda** as director of production engineering. The appointment was announced by G. M. Sommer, vice president-engineering.

Royal Metal Mfg. Co.'s Arnot-Jamestown Div. has announced the appointment of **Bernard F. Gofberg** as general manager, according to D. Dadourian, president of the parent company.

Binks Mfg. Co., Chicago, has appointed **John R. Adams** to direct its Customer Research Laboratory and Spray Painting School, according to an announcement by Burke Roche, president. In addition to his basic duties, Adams will conduct special schools, direct material testing procedures, and speak at spray painting industry clinics.



MILLS



SINGLEY

Westinghouse Electric Corp.'s Reese Mills, the first manager of the Westinghouse Electric Range Dept., retired on Sept. 1 after more than 40 years with the company. Mills served for 20 years on the excise tax committee of the National Electrical Manufacturers Assn., and on several occasions was chairman of the range and water heater committees of the same organization.

Armco Div., Armco Steel Co., has named **Edwin L. Singley** assistant district sales manager for the Philadelphia district, according to W. B. Quail, vice president-sales. The territory served by the Philadelphia office includes the eastern half of Pennsylvania, most of New Jersey, Maryland, and Virginia, and the District of Columbia, Delaware, and North Carolina.

Wyandotte Chemicals Corp. has announced that **Douglas H. Holmes** has joined the Industrial Dept. as a sales-service representative in the Kansas City district. Holmes' background includes supervision of metal cleaning and chemical processing in various plants for the past 13 years.

Kelvinator Div., American Motors Corp., has named **William E. Reddig** as director of styling, according to B. A. Chapman, executive vice president and general manager of the appliance division. Reddig joined American Motors in 1950 and, since 1955, had been assistant to the director of automotive styling.

Kawneer Co., Niles, Mich., has announced the election of four new officers. **Robert J. Offringa**, formerly director of marketing, was elected vice president of Eastern area sales. **Stephen A. Furbacher** was named vice president-Mill Products Div. He had been general manager of this operation.

Jack M. Roehm, formerly director of research and development, was elected vice president of research and development. **W. Jack Woodruff** becomes vice president-Appliance Products Div. Woodruff was formerly general manager of the Cynthiana, Ky. operation.

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is Easy**

**with
FAIRMONT
ALUMINUM
coiled sheet**

When choosing aluminum coiled sheet for heat transfer products, alert manufacturers demand deep-drawing, non-earing stock for rapid as well as uniform forming of collars without cracking or buckling. Close adherence to required gauge tolerance is of prime importance in manufacturing cost.

The low-cost, highly efficient product you've made from Fairmont aluminum will give years

of use to satisfied customers, because Fairmont aluminum resists corrosion and breakdown.

Along with rigid quality control, Fairmont offers "individualized" attention to manufacturers' requirements for coiled and flat sheet in 1100, 3003, 5005, 5050 and 5052 alloys. Let us show you why Fairmont aluminum is being specified by the foremost heat transfer product manufacturers. Write or call today for details.

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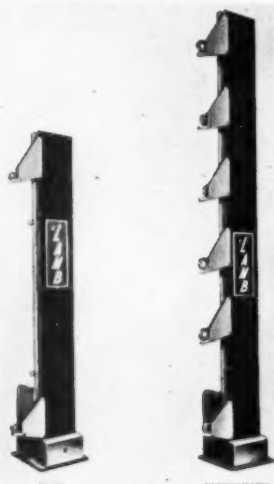


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 Elmhurst, Illinois

editorial voice of the national safe transit program

devoted to improving packaging methods and shipping and materials handling methods for the appliance and metal products manufacturing industries. This section contains plant experience information and industry advances for the use of all executives and plant men interested in improving packaging and shipping methods and in loss prevention. The section contains complete information on the national safe transit pre-shipment testing program for packaged finished products and detailed reports of divisions and sub-committees of the National Safe Transit Committee.

Elevator Handling System



Single and dual-lift parts elevators and 2-10-way elevator distributors were recently announced by the F. Jos. Lamb Co., Detroit, Mich. The units provide gravity potential and part distribution for automatic parts handling installations. Single lift units handle up to 5000 parts per hour. Both rolling and sliding parts are accommodated. Bolted construction permits reassembly to suit various part sizes. Materials used are specially selected to minimize part nicking.

Versatile Crane Runs On 40 I-Beam Sizes

A versatile crane having flangeless and aligning end truck wheels is said to be operable on over 40 standard structural I-beams, wide flange beams, and on hardened monorail track. The end trucks also traverse the junction of unlike beams.

Side guide rollers bear against the web of the beam rather than against

the flange. The unit may be motor-driven, hand-gear, or of the "push" type. For further information, write to Dept. MPM, Mechanical Equipment Co., Inc., 3100 Prospect Ave., Cleveland 15, Ohio.

Test Procedures Revised

National Safe Transit Committee's Official Test Procedures keep pace with progress. While the basic test procedures described under Project 1 and 1A remain substantially the same, certain necessary and desirable revisions have been made in the interest of added simplicity and clarity.

The revised edition now contains complete up-to-date instructions on how to obtain manufacturer certification, along with a clarification of NSTC's policy regarding frequency of testing.

Included is a line drawing which presents in unmistakable terms just what is meant by "packaged product." With its new format and several minor terminology changes, the Official Test Procedures booklet becomes a welcome addition to the reference files of both sales and technical personnel. Copies are available at 25 cents each by writing to National Safe Transit Committee, Inc., 1145 Nineteenth St., N. W., Washington 6, D. C.

Heavy Duty Lift Trucks

A booklet on materials handling equipment relates engineering developments and operating features of a heavy-duty line of fork lift trucks. Among the features described are a pivotal-mounted steering axle and an electrically-welded, all-steel frame. Available in 27 models, the lift trucks have capacities ranging from 8,000 to 40,000 pounds. Free

copies of the booklet are available from Dept. MPM, Gerlinger Carrier Co., Dallas, Ore.

Collapsible Box Saves Space, Has 300-Pound Capacity

A one-piece, collapsible box for transporting or storing many kinds of materials is now available from National Vulcanized Fibre Co., Wilmington, Del. Known as the Kennett collapsible box, it is designed to provide a large-capacity container, easily handled by fork lift, that can be collapsed into six inches of its original height. The collapsing is done by means of piano-type hinges which connect the box's side panels, split end panels, and base.



A stacking foot permits fork lifts to handle the box singly or stacked from all four sides. Edges of the box are reinforced with metal moldings. Maximum weight for a single box is 300 pounds.

Provides Engineering Services

Tote System, Inc., Beatrice, Neb., manufacturers of bulk materials handling equipment, has announced that the company will provide complete engineering services.



Prize winner! This beer box won a Silver Award at the Fifth Annual Fibre Box Competition.

People who want a quick beer choose this new pull-tab container by International Paper



Lift—pull—tear—and it's open! But that's only half the story.

The other half is the high-speed end-loading feature of this new corrugated beer container created by International Paper's Container Division. The judges at this year's Fifth Annual Fibre Box Competition liked it so much they gave it a Silver Award (one of ten awards won by International Paper).

The same design and manufacturing in-

genuity goes into every International Paper shipping container. And every container gives you these 7 extra values:

1. **First-class engineering.** Truly creative packaging by the same team that originated the tube-and-cap design, now standard in the industry, and many others.
2. **Time-proved boxmaking skill:** several hundred million containers annually.
3. **Built-in savings.** Maximum strength, least weight, best cost-saving design.

4. **Convenient delivery:** 19 strategically-located box plants. (Plants 20 and 21 are now under construction.)

5. **Virgin fibre** for greatest strength, smooth surface, uniform color.

6. **Fair prices** in line with top quality.

7. **A dependable source of supply.** The *only* containers backed by the full resources of International Paper.

See your Container Division packaging expert. He's a good man to know.

Container Division **INTERNATIONAL PAPER** New York 17, N. Y.

Latest Safe Transit manufacturer and laboratory certifications--3rd quarter, 1959

Following is a listing of 160 manufacturers and 68 laboratories that have achieved certified status. The list became effective July 1, 1959. Carriers especially have found this up-to-date

listing a useful guide in directing them to local testing facilities able to furnish package engineering and other technical assistance beneficial to many of the carrier customers experiencing shipping

difficulties. Additional copies of the lists may be ordered free of charge by writing National Safe Transit Committee, Inc., 1145 Nineteenth St., N. W., Washington 6, D. C.

Manufacturers

Addison Products
Addison, Michigan

Addison Products
Jonesville, Michigan

Aircapitol Manufacturers, Inc.
Wichita, Kansas

Airtemp Division
Chrysler Corporation
Dayton, Ohio

AllianceWare
Alliance, Ohio

Allis-Chalmers Mfg. Co.
Gadsden, Alabama

Allis-Chalmers Mfg. Co.
Pittsburgh, Pennsylvania

All-Steel Equipment Inc.
Aurora, Illinois

Amana Refrigeration, Inc.
Amana, Iowa

America & Southern Corp.
Nashville, Tennessee

Beatty Bros. Ltd.
Fergus, Ontario, Canada

Beckman Instruments, Inc.
Fullerton, California

Belvidere Products Inc.
Belvidere, Illinois

Ben-Hur Mfg. Co.
Milwaukee, Wisconsin

Black & Decker Mfg. Co.
Towson, Maryland

Bryant Div. Carrier Corp.
Tyler, Texas

Bryant Mfg. Co.
Indianapolis, Indiana

Burnham Corp.
Irvington, New York

Calcinator Corp.
Bay City, Michigan

Canadian Westinghouse Co. Ltd.
Plant #2
Hamilton, Ontario, Canada

Canadian Westinghouse Co. Ltd.
Brantford, Ontario, Canada

Canadian Westinghouse Co. Ltd.
Stoney Creek, Ontario, Canada

Case Manufacturing Corp.
Robinson, Illinois

Central Rubber & Steel Corp.
Findlay, Ohio

Chambers Manufacturing Corp.
Oxford, Mississippi

Chicago Vitreous Corp.
Cicero, Illinois

Clarostat Mfg. Co., Inc.
Dover, New Hampshire

Clinton Engines Corp.
Clinton, Michigan

C. G. Conn Ltd.
Elkhart, Indiana

Cooler Division
McGraw-Edison Co.
Albion, Michigan

Coralware Mfg. Co.
Chicago, Illinois

Crosley Division
AVCO Mfg. Corp.
Cincinnati, Ohio

Design & Mfg. Corp.
Connersville, Indiana

Diebold, Inc.
Canton, Ohio

Dostal & Lowey Co. Inc.
Menomonee Falls, Wisconsin

Eagle Range & Mfg. Co.
Belleville, Illinois

Easy Laundry Appliances Div.
The Murray Corp. of America
Syracuse, New York

Elgin Metalformers Corp.
Elgin, Illinois

Eljer Company Div.
The Murray Corp.
Scranton, Pennsylvania

Emerson Electric Mfg. Co.
St. Louis, Missouri

Ervite Corp.
Erie, Pennsylvania

Fairbanks, Morse & Co.
St. Johnsbury Works
St. Johnsbury, Vermont

Fairbanks, Morse & Co.
Westco Works
St. Louis, Missouri

Fawn Engineering Corp.
Des Moines, Iowa

Fedders Corp.
Buffalo, New York

Fedders Corp.
Maspeth, New York

Foster Refrigerator Corp.
Hudson, New York

Franklin Mfg. Co., Inc.
Minneapolis, Minnesota

Franklin Mfg. Co., Inc.
St. Cloud, Minnesota

Franklin Mfg. Co., Inc.
Webster City, Iowa

Gates Radio Co.
Quincy, Illinois

General Electric Co.
Bloomfield, New Jersey

General Electric Co.
Home Laundry Dept.
Louisville, Kentucky

General Electric Co.
Household Refrigerator Dept.
Louisville, Kentucky

General Electric Co.
High Voltage Switchgear Dept.
Philadelphia, Pennsylvania

Glascok Mfg. Co.
Muncie, Indiana

Hammond Organ Co.
Chicago, Illinois

Hardwick Stove Co.
Cleveland, Tennessee

Haskell Mfg. Co., Inc.
Verona, Pennsylvania

Hobart Mfg. Co.
Louisville, Kentucky

The Home-O-Nize Co.
Muscatine, Iowa

Ideal Dispenser Co.
Columbus, Ohio

Ingersoll-Humphries Div.
Borg-Warner Corp.
Mansfield, Ohio

Ingersoll Products Div.
Borg-Warner Corp.
Chicago, Illinois

Ingram-Richardson, Inc.
Frankfort, Indiana

Kaiser Metal Products, Inc.
Bristol, Pennsylvania

Kelvinator Div.
American Motors Corp.
Grand Rapids, Michigan

Kemper Bros. Inc.
Richmond, Indiana

Lakeside Mfg. Inc.
Milwaukee, Wisconsin

La Porte Div.
The Coleman Co. Inc.
La Porte, Indiana

Lauber Manufacturing Co.
Archbold, Ohio

Lennox Industries, Inc.
Marshalltown, Iowa

H. C. Little Burner Co., Inc.
San Rafael, California

M & D Store Fixtures
Cambridge City, Indiana

Magic Chef
Franklin, Tennessee

Manitowoc Equipment Works
Manitowoc, Wisconsin

The Maytag Co.
Newton, Iowa

A. Y. McDonald Mfg. Co.
Dubuque, Iowa

Mears Electric Circ. Breakers, Inc.
Portland, Oregon

Midwest Mfg. Corp.
Subsidiary Admiral Corp.
Galesburg, Illinois

Moffats Ltd.
Weston, Ontario, Canada

Monogram Industries, Inc.
Quincy, Illinois

Mt. Vernon Furnace & Mfg. Co.
Mt. Vernon, Illinois

Murray Mfg. Co.
Murray, Kentucky

National Heating & Cooling
Mfg. Corp.
Zanesville, Ohio

National Plumbing Pottery
Zanesville, Ohio

National-U.S. Radiator Corp.
Johnstown, Pennsylvania

Neon Products, Inc.
Lima, Ohio

Newark Ohio Co.
Newark, Ohio

New Monarch Machine &
Stamping Co.
Des Moines, Iowa

Norge Div.
Borg-Warner Corp.
Effingham, Illinois

Norge Div.
Borg-Warner Corp.
Herrin, Illinois

Norge Div.
Borg-Warner Corp.
Muskegon Heights, Michigan

Ortman-McCain Co.
Chicago, Illinois

Owosso Mfg. Co.
Benton, Arkansas

Peerless Mfg. Div.
Dover Corp.
Louisville, Kentucky

Percival Refrigeration Co.
Boone, Iowa

Porcelain Metals Corp. of Louisville
Louisville, Kentucky

Preway, Inc.
Wisconsin Rapids, Wisconsin

Remington Corp.
Auburn, New York

Revco, Inc.
Deerfield, Mich.

Rex Mfg. Co.
Connersville, Indiana

Reznor Mfg. Co.
Mercer, Pennsylvania

George W. Rice & Son
Springfield, Massachusetts

Ritter Co., Inc.
Rochester, New York

George D. Roper Corp.
West Kankakee, Illinois

Rotuba Extruders, Inc.
Brooklyn, New York

Royal Electric Mfg. Co.
Chicago, Illinois

Royal McBee Corp.
Terryville, Connecticut

Siegler Heating Co.
Div. of The Siegler Corp.
Centralia, Illinois

The Silex Co.
Chicago, Illinois

Simonds Abrasive Co.
Philadelphia, Pennsylvania

Simonds Worden White Co.
Dayton, Ohio

A. O. Smith Corp.
Permaglas Div.
Kankakee, Illinois

State Stove & Mfg. Co.
Nashville, Tennessee

Stewart-Warner Corp.
Heating & Air Conditioning Div.
Lebanon, Indiana

Stiglitz Corp.
Louisville, Kentucky

Stolper Steel Products Corp.
Menomonee Falls, Wisconsin

Stromberg-Carlson Co.
Rochester, New York

Style-Rite of America
Clifton, New Jersey

Sub-Zero Freezer Co., Inc.
Madison, Wisconsin

The Sunray Stove Co.
Delaware, Ohio

Sylvania Electric (Canada) Ltd.
Dunnville, Ontario, Canada

Sylvania Home Electronics
Batavia, New York

The Tappan Co.
Mansfield, Ohio

Temco, Inc.
Nashville, Tennessee

Texas Instruments, Inc.
Houston, Texas

UARCO, Inc.
Chicago, Illinois

United Co-Operatives, Inc.
Alliance, Ohio

United Music Corp.
Chicago, Illinois

The Vendo Co.
Kansas City, Missouri

Vendorlator Mfg. Corp.
Fresno, California

Vent-A-Hood Co.
Dallas, Texas

Victor Products Corp.
Hagerstown, Maryland

Victory Metal Mfg. Corp.
Plymouth Meeting, Pennsylvania

Vitreous Steel Products Co.
Cleveland, Ohio

The Waddell Co., Inc.
Greenfield, Ohio

Watertown Div.
The New York Air Brake Co.
Watertown, New York

Wells-Gardner & Co.
Chicago, Illinois

Westinghouse Electric Corp.
Beaver, Pennsylvania

Westinghouse Electric Corp.
Bloomington, Indiana

Westinghouse Electric Corp.
Buffalo, New York

Westinghouse Electric Corp.
Columbus, Ohio

Westinghouse Electric Corp.
Kansas City, Missouri

Westinghouse Electric Corp.
Mansfield, Ohio

Westinghouse Electric Corp.
Micarta Division
Hampton, South Carolina

Westinghouse Electric Corp.
Pittsburgh, Pennsylvania

Westinghouse Electric Corp.
Raleigh, North Carolina

Westinghouse Electric Corp.
Sharon, Pennsylvania

Westinghouse Electric Corp.
Springfield, Massachusetts

Westinghouse Electric Corp.
Staunton, Virginia

D. W. Whitehead Mfg. Corp.
Trenton, New Jersey

Wilnot Castle Co.
Rochester, New York

John Wood Co.
Heater & Tank Div.
Chicago, Illinois

John Wood Co.
Conshohocken, Pennsylvania

W. C. Wood Co. Ltd.
Guelph, Ontario, Canada

Yawman & Erbe Mfg. Co.
Rochester, New York

York Division, Borg-Warner Corp.
Decatur, Illinois

York Div., Borg-Warner Corp.
York, Pennsylvania

Yuba Power Products, Inc.
Cincinnati, Ohio

Laboratories

Alabama

Headquarters, Mobile
Air Materiel Area
Brookley Air Force Base, Alabama

California

Container Corporation of America
2601 South Malt Avenue
Los Angeles 22, Calif.

Illinois

Alton Box Board Co.
Container Div.
Sixth & Zschokke St.
Highland, Illinois

Bigelow-Garvey Lumber Co.
325 West Huron St.
Chicago 10, Illinois

Central Fibre Products Co.
901 South Front St.
Quincy, Illinois

Chicago Mill & Lumber Co.
2660 Clybourn Ave.
Chicago 14, Illinois

Container Corp. of America
Central Laboratory
10 North Clark St.
Chicago 2, Illinois

Container Laboratories, Inc.²
112 West Kinzie St.
Chicago 10, Illinois

Gaynes Engineering Co.³
1642 West Fulton St.
Chicago 12, Illinois

General Box Co.
1825 Miner St.
Des Plaines, Illinois

Illinois Box & Crate Co.
811 Center St.
Plainfield, Illinois

Don L. Quinn Co.²
224 West Kinzie St.
Chicago 10, Ill.

Indiana

Container Corp. of America
Anderson, Indiana

Dura-Crates, Inc.
940 E. Michigan St.
Indianapolis 2, Indiana

Fort Wayne Corrugated Paper Co.
130 E. Douglas Ave.
Fort Wayne, Indiana

Inland Container Corp.
700 West Morris St.
Indianapolis 8, Ind.

Pomeroy Mfg. Co. Div.
Central Fibre Products Co.
408 E. St. Clair St.
Vincennes, Ind.

Iowa

Hoerner Boxes, Inc.
Main Street Road
Keokuk, Iowa

Kansas

Lawrence Paper Co.
New Hampshire St.
Lawrence, Kansas

Love Box Co., Inc.
P. O. Box 546
Wichita 1, Kansas

Kentucky

The Mengel Co.
1111 Zane St.
Louisville, Kentucky

Louisiana

Olin Mathieson Chemical Corp.
Forest Products Div.
P. O. Box 488
West Monroe, Louisiana

Michigan

Ottawa River Div.
Mead Containers, Inc.
P. O. Box 629
G-4349 S. Dort Highway
Flint 7, Michigan

River Raisin Paper Co.
Monroe, Michigan

Twin Cities Container Corp.
Coloma, Michigan

Minnesota

Northwestern Corrugated Box Co.
1821 Marshall St., N.E.
Minneapolis, Minnesota

Mississippi

Indianapolis Wirebound Box Co.
Fernwood, Mississippi

Missouri

Gaylord Container Corp.
Div. Crown Zellerbach Corp.
143 Arsenal St.
St. Louis 18, Missouri

New Jersey

Eastern Corrugated Container Corp.
227 Clifton Boulevard
Clifton, New Jersey

The Mengel Co.
Corrugated Box Div.
P. O. Box 189
New Brunswick, New Jersey

Package Research Laboratory¹
Rockaway, New Jersey

New York

Binghamton Container Co., Inc.
28 Crandall St.
Binghamton, New York

Container Laboratories, Inc.²
45 East 22nd St.
New York 10, N. Y.

The Continental Can Co., Inc.
Robert Gair Paper Products Group
911 Hiawatha Blvd. East
Syracuse 9, New York

Corning Fibre Box Corp.
P. O. Box 18
Corning, New York

Mead Containers, Inc.
Delavans Div.
P. O. Box 1138
Syracuse 1, New York

L.A.B. Corp.³
Skaneateles, New York

The Mengel Co.
Corrugated Box Div.
P. O. Box 383
Fulton, New York

Mohawk Containers, Inc.
900 Jefferson Road
Rochester, New York

Mohawk Containers, Inc.
136 Walter Drive
Syracuse, New York

North Carolina

The Mengel Co.
Corrugated Box Div.
Winston-Salem, North Carolina

Ohio

Canton Corrugated Box Co. Div.
St. Regis Container Corp.
2820 Winfield Way, N.E.
Canton 5, Ohio

Continental Can Co., Inc.
975 Glenn St.
Van Wert, Ohio

The Corrugated Container Corp.
640 Shoemaker Ave.
Columbus 3, Ohio

Cozier Container Corp.
446 East 131st St.
Cleveland 8, Ohio

Hinde & Dauch Div.
West Virginia Pulp & Paper Co.
Sandusky, Ohio

The Lewisburg Container Co.
Lewisburg, Ohio

Moraine Box Co.
Dayton, Ohio

Ohio Boxboard Co.
Rittman, Ohio

Olin Mathieson Chemical Corp.
Forest Products Div.
220 N. Bend Road, Cincinnati, Ohio

Pennsylvania

Container Laboratories, Inc.²
Philadelphia Branch

Terwood Road
Willow Grove, Pennsylvania

South Carolina

International Paper Co.
Container Testing Laboratory
Georgetown, South Carolina

Tennessee

The Mengel Co.
285 W. Trigg Ave.
P. O. Box 10105
Memphis, Tennessee

The Nashville Corrugated
Box Co. Div.
The Mengel Co.
P. O. Box 968
Nashville, Tennessee

Texas

Institute of Packaging⁵
Southern Methodist University
Dallas, Texas

Vermont

Atlas Plywood Corp.
Morrisville, Vermont

Wisconsin

Cornell Paperboard Products Co.
1514 E. Thomas Ave.
Milwaukee 1, Wisconsin

Green Bay Box Co.
Green Bay, Wisconsin

Kieckhefer Box & Lumber Co.
Milwaukee, Wisconsin

Package Development Corp.
1000 South Water Street
Milwaukee 4, Wisconsin

Canada

Bathurst Power & Paper Co. Ltd.
1035 Hodge St.
St. Laurent, Quebec

Bathurst Containers Ltd.
1000 Gerrard St., East
Toronto, Ontario

Continental Can Co. Ltd.
Gair Paper Products Div.
P. O. Box 4021, Terminal A
Toronto, Ontario

Hinde & Dauch Paper Co.
Canada Ltd.
43 Hanna Ave.
Toronto 3, Ontario

Hygrade Containers Ltd.
575 Pall Mall St.
London, Ontario

Hygrade Containers Ltd.
1170 Martin Grove Road
Rexdale, Ontario

Hygrade Containers Ltd.
15300 Sherbrooke St., East
Montreal 5, Quebec

Livingston Wood Mfg. Ltd.
Tillsonburg, Ontario

1. Government Agency Laboratory.
2. Independent Commercial Laboratory.
3. Laboratory Operated by Test Equipment Manufacturer.
4. Industry Laboratory.
5. Independent Commercial Laboratory Operated by University.

*"All manufacturing,
engineering, and quality
efforts are in vain
if the product reaches
its destination
in a damaged condition."*



MEET THE MAN FROM WIREBOUND

At Ingersoll-Humphries Div., Borg-Warner Corp.

Wirebound protective crates pack 50% faster...ship for less!

In the Mansfield, Ohio plant of Ingersoll-Humphries Div., Borg-Warner Corp., a Crate Making Department was kept busy supplying special wooden boxes for shipment of the quality enameled cast iron plumbing fixtures that have made this company famous.

Then came the Man from Wirebound. With the help of Ingersoll-Humphries' control and packaging executives he custom-engineered sample Wirebound crates and put them to test. The results were astounding.

Today Wirebounds save Ingersoll-Humphries up to 33 percent on packing labor... with gains up to 50% in packing production. The Crate Making Department is closed and the men and space are put to better use. The Packing Department operates with one less shift. Product protection is better than ever. Tare weight is reduced substantially.

Why not discover what the Man from Wirebound can contribute to your packaging operation? He is a qualified packaging engineer... happy to study your methods... offer money saving suggestions... submit samples for you to test. There's no obligation or cost.

FREE: Send for informative booklet, "What to Expect from Wirebounds"

Wirebound
BOXES & CRATES

WIREBOUND BOX MANUFACTURERS ASSOCIATION

Room 1461, 222 West Adams St., Chicago 6, Ill.

☐ Please have the Man from Wirebound call on me

Name _____

Company _____

Address _____

City _____

☐ Please send FREE booklet "What to Expect from Wirebounds"

Title _____

State _____



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Safe Transit News

→ from Page 85

Heavy-Duty Fork Trucks

A six-page, illustrated folder which describes a new line of heavy-duty fork trucks, has been published. The trucks are available in capacities from 12,000 to 20,000 pounds. Dimensions and specifications are given, along with a special table, which compares features of the new line with similar models. For the folder, write to Dept. MPM, Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, Ohio.

Safe Transit Program Presented To SESAB



RALPH BISBEE

Complete presentation of the National Safe Transit program was given before a meeting of the Southeastern Shippers Advisory Board, held at the Hotel Robert Meyer, Jacksonville, Florida, September 10-11.

The NST presentation was made by Ralph Bisbee, president of NSTC, Inc., who was introduced by C. A. Naffziger, director of the Freight Loss and Damage Section of AAR. Included in the presentation was the showing of the latest NST film, "A blindfold removed."

The report following the meeting indicates a very favorable reaction to the NST program, and it was indicated that numerous railroad presidents showed sufficient interest to request personal consultation.

An invitation was presented to Bisbee for a repeat of the program before a group of 350 members of SESAB at a meeting at Miami Beach, Florida, December 10-11.

Catalog Describes Lifting And Dumping Equipment

Dumping equipment that will lift and dump any container is described in a catalog recently published. The brochure has a selector chart to facilitate choosing the right equipment for handling loads to 5000 pounds at dumping heights up to 50 feet.

Four basic models are shown, each available in designs to accommodate drums and barrels, boxes, bags, or trucks. Copies of the catalog are available on request to Dept. MPM, Conveyors & Dumpers, Inc., P.O. Box 567, West Caldwell, N.J.



CHICAGO MILL — Largest Manufacturers Of EXPORT SHIPPING CONTAINERS for the APPLIANCE INDUSTRY



FREE: Illustrated catalog describing Chicago Mill Containers and Services.



America's leading appliance manufacturers rely on Chicago Mill for export shipping containers to assure safe arrival of their products. These manufacturers know, from long experience, that Chicago Mill containers protect the finishes and mechanisms, withstand the handling and shocks encountered during overseas shipment, discourage pilferage and practically eliminate loss and damage claims.

Whether you do your own packaging for overseas shipment — or have it done for you by export packaging firms — your appliances will reach their destinations safely in Chicago Mill Export Containers!

FOR SAFER TRANSIT BY • BOAT • TRUCK • TRAIN • PLANE
Always Use Chicago Mill Shipping Containers.

CHICAGO MILL AND LUMBER COMPANY

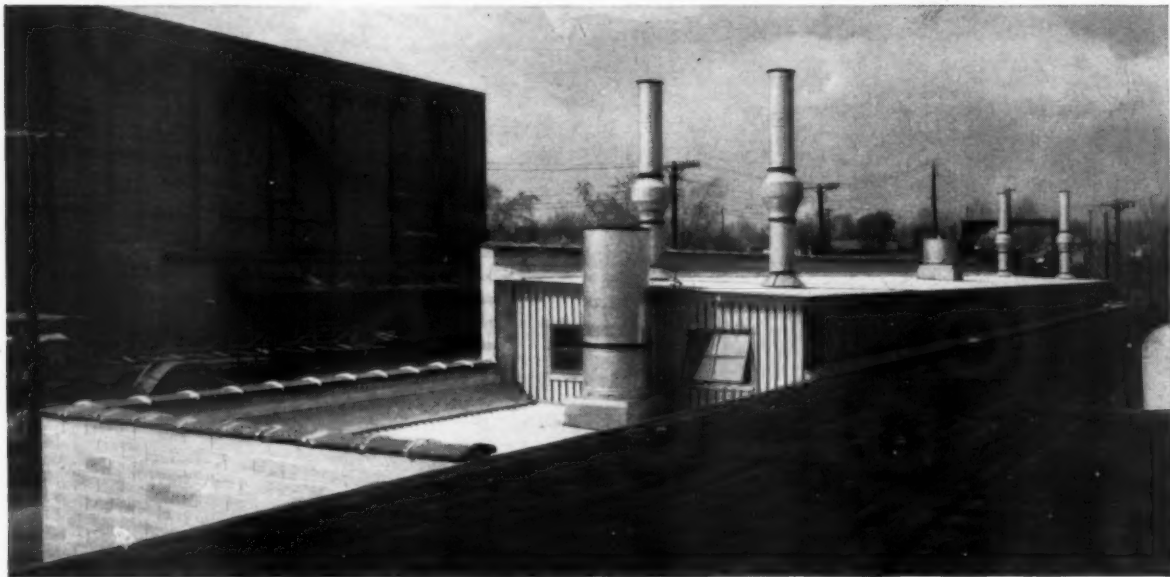
33 South Clark Street

Chicago 3, Illinois

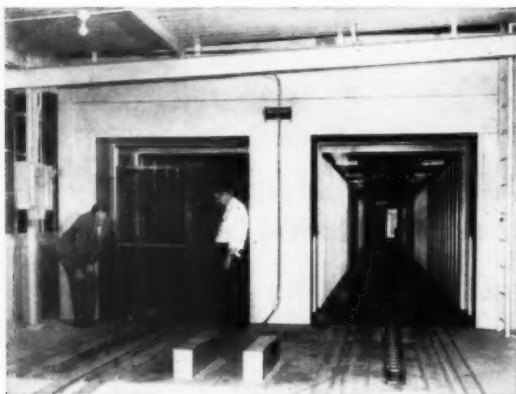
Plants at:

Helena, Arkansas • Rockmart, Georgia • Tallulah, Louisiana • Greenville, Mississippi • Chicago, Illinois

FINISHING SYSTEMS...



Stout Sign Company Eliminates Production Bottleneck with Conveyorized Paint Baking Equipment!



In the two ovens above, installed at Stout Sign Company, St. Louis, Mo., uniform drying is accomplished by four recirculating zones in each oven. Hot air is forced across the oven by pressure and suction controlled by banks of narrow, vertical apertures in the oven walls which extend from floor to ceiling. These narrow apertures assure even distribution of hot recirculated air, and cause the air to flow horizontally through the sign racks and over the work. The direction of air flow is reversed in each successive zone. Air is recirculated at the rate of 13 oven volumes per minute.

Mahon engineers were called in to solve a paint-baking bottleneck in the production of metal signs painted with the silk screen process. This application process necessitates stacking freshly painted signs in a horizontal position, with only two inches of air space between, in specially built racks. Stout Signs had previously been baked in this manner in batch-type ovens.

The solution arrived at by Mahon engineers was two parallel tunnel-type, conveyorized ovens built as a single unit adjacent to the plant. Each oven was provided with independent temperature and conveyor speed controls and was designed to utilize existing sign drying racks which were modified and adapted to conveyor use.

The Stout Sign Company is now able to control temperature and time-length of the drying and baking process to meet any finish requirements... they are relieved of much manhandling of racks, and are free from excessive paint fumes and dust and lint troubles; production flows smoothly, and the quality of finish on their product is vastly improved.

The enthusiasm of a satisfied customer is best evidenced by the following excerpt from a letter recently received from Stout Sign Company: "Let me congratulate you and your entire engineering staff on an accomplishment beyond our expectations."

When you consider new finishing equipment or processing equipment of any type, you, too, will want to discuss your requirements with Mahon engineers.

THE R. C. MAHON COMPANY • Detroit 34, Michigan
Sales-Engineering Offices in Detroit, New York, Chicago, Los Angeles and San Francisco
Engineers and Manufacturers of Complete Conveyorized Finishing Systems: Metal Parts Washers, Metal Cleaning and Rust Proofing Machines, Conveyorized Cleaning and Pickling Machines; Dry-Off Ovens, Spray Booths, Electrostatic Spray Enclosures, Flow Coaters, Dip Coaters, Finish Baking Ovens, and Paint Stripping Equipment; Core Ovens, Soldering Ovens, Dehydrating Ovens, Heat Treating and Quenching Equipment for Aluminum and Magnesium; Dust and Fume Control Installations, and Many Other Units of Special Plant and Production Processing Equipment.

See Sweet's Plant Engineering File for Information and Representative Installations, or Write for Catalogue A-659

... the EXPERIENCE that goes
into the PLANNING and ENGINEERING
of MAHON EQUIPMENT is the item of
GREATEST VALUE to YOU!

MAHON

Industry personals

→ from Page 82

Container Div., Rheem Mfg. Co., has appointed three divisional vice presidents. According to E. F. Paquette, vice president and general manager of the Linden, N.J. division, the appointments are as follows: **William S. Goodfellow**, vice president-marketing; **C. R. Jones**, vice president-controller; and **O. X. Pitney**, vice president-operations.

Cribben & Sexton Co., Chicago, has announced the appointment of **John A. Belanger** as sales manager of the Commercial Cooking Equipment Div. The appointment was announced by Ronald J. Sheperd, vice president in charge of sales. Belanger had been a sales representative in the Michigan, Ohio, and Indiana territories.

Westinghouse Electric Supply Co. has named **A. Dwight Lynch** as national sales manager of specialty products, according to B. H. Boatner, president of the firm. Lynch had been regional manager of portable appliance sales for the southwest, with headquarters in Atlanta, Ga. for more than five years. His place will be taken by **R. J. Frick**, a veteran Westinghouse sales executive.

Admiral Corp. has announced the appointment of **Howard L. Rendelman** as regional sales manager for the Cleveland, Toledo, Youngstown, Ohio and Hazleton, Pa. territory. Rendelman has been with Admiral for 11 years as key account salesman and sales manager of the company's Washington, D.C. distributing branch.

Link-Belt Co. has appointed **Robert G. Bottorf** as sales manager of the Colmar, Pa. plant, according to Leslie J. Carson, general manager. Bottorf succeeds **Byron K. Hartman**, who has been named executive vice president and general manager of Syntron Co., Homer City, Pa., subsidiary of Link-Belt. Syntron manufactures vibratory materials handling equipment and electronic devices and equipment.

HARTMAN



BOTTORF



Youngstown Sheet & Tube Co.'s Campbell works has announced the appointment of **Robert G. Griffith** as superintendent of the seamless tube mills, according to E. O. Reese, district manager. He succeeds George T. Radford, who has retired after 15 years with the company.

Detroit Stamping Co., Detroit, has appointed **George M. Hargreaves** as market and research director, according to an announcement by Harry C. Robeson, vice president-sales. He will be in charge of marketing, sales promotion, advertising, and product development for all divisions.

Cribben & Sexton Co., Chicago, a subsidiary of Waste King Corp., has named **George H. Childers** as general sales manager. His appointment was announced by Ronald J. Sheperd, vice president in charge of sales. Childers comes to Cribben & Sexton from Chrysler Airtemp, Dayton, where he was general sales manager of the Room Air Conditioner Div.



HARGREAVES



CHILDERS

Yale Materials Handling Div., The Yale & Towne Mfg. Co., has promoted **John P. Horan** to market research manager, according to an announcement by Clyde R. Dean. Horan succeeds **Frank P. Minnelli**, who was named director of planning on the staff of President G. W. Chapman.

G. S. Blakeslee & Co., Chicago, manufacturers of solvent vapor degreasers, metal parts washing machines, and degreasing solvents, has named **Robert O. Grunditz** as sales engineer serving the Massachusetts area, and **C. W. Harris** as sales engineer serving the Detroit area.

Pittsburgh Plate Glass Co.'s Felix T. Hughes, vice president - merchandising division, has announced the appointment of **Richard P. Bell** as general manager of paint sales. Bell succeeds **Guy J. Berghoff**, who was recently appointed vice president of the company's paint division.



PIERCE



WILGUS

Ebco Mfg. Co., Columbus, Ohio, has announced the appointment of **Elisha G. Pierce** as advertising manager, filling the vacancy created by T. J. Spence's resignation. Pierce was assistant advertising manager for two years. Ebco manufactures Kelvinator and Oasis refrigeration appliances.

Controls Co. of America, Schiller Park, Ill., has named **H. B. Wilgus** general sales manager, appliance and automotive controls sales. In his new post, he will direct both the central office sales force and the field organization.

In former positions, Wilgus was marketing consultant with Safety Industries, Inc., Hamden, Conn.; general manager, Sutco Motor Div., O. A. Sutton Corp., Wichita, Kans.; vice president of sales and general manager of Electric Products Co., Cleveland; and general sales manager of Redmond Co., Owosso, Mich.

Burndy Corp. officials have announced the election of **Marvin Lee** to the office of president. He succeeds **Bern Dibner**, who was elected chairman of the board of directors.

Trimview Metal Products, Covina, Calif., has, according to Elwood M. Buck, general manager, appointed **Charles E. Lawrence** sales manager. Trimview, which manufactures aluminum sliding doors, aluminum sliding windows, casement windows, aluminum window wall shower doors and tub enclosures, is the metal fabricating division of W. P. Fuller & Co.

The Emerson Electric Mfg. Co., St. Louis, Mo., has announced that **Richard Lindgren** has assumed the management of motor sales for Emerson and its subsidiary located in Colorado Springs, Emerson-Western Co. The announcement was made by E. L. O'Neill, vice president and general sales manager of the company. It was also announced that **O. D. Metz**, who has been manager of motor sales for the company, will assume new responsibilities as assistant to the general sales manager.



NATURE'S PURITY...ARTISTIC PERMANENCE

YOURS IN **HOMMEL COVER COATS**

Capture the purity and beauty of a fresh snowfall . . . then endow this smooth, uniform texture with enduring permanence. You have a Hommel Cover Coat . . . a quality-controlled finish embracing both the functional and the decorative.

Put your porcelain enamelling requirements in the hands of Hommel's specialists and be assured of the best in both product and service. You'll find Hommel Cover Coats give broader coverage and more uniform texture . . . with no costly production tie-ups. Available in pure white or brilliant and pastel colors.



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PORCELAIN ENAMEL
FRITS

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**POTTERY • STEEL AND CAST IRON FRIT
CERAMIC COLORS • CHEMICALS • SUPPLIES**

Our Technical Staff and Samples are available to you without obligation. Let us help with your problems.

World's Most Complete Ceramic Supplier

Dept. MPM - 1059

Future of the Home Laundry Appliance Industry

(Continued from the Special Home Laundry Section of September MPM)



SCHAEFER



BROOKER

Robert E. Brooker

PRESIDENT, WHIRLPOOL CORP.

Industry future lies in the independent dealer

THE FUTURE OF THIS INDUSTRY must be related to the success and growth of the independent dealer, and the service system which backs him up in the product he sells. Many times the independent dealer is concerned primarily with the problems of price competition, whereas the real professionals in this field concern themselves much more with being highly competitive in the people they attract to represent them in the market place and the competitive growth of capital within their dealership to sustain the growth available with the increasing population and new laundry products.

A competitive organization requires one that is properly compensated, one that has the security of steady employment generated by a stable business, and the enthusiasm that comes with the opportunity for personal advancement with the programs of product training furnished by the manufacturer. Competitive price becomes less and less a factor with this professional selling group.

The consumer is going to rely on the retail dealer to interpret the advertising claims of the manufacturer and to recommend the product best suited to the consumer need. Once the dealer accepts this premise, he will carry the manufacturer's full line of product so that he can sell up to better value, and he will have a well trained sales organization to participate in this market. This combination will produce a profit ratio that will allow for reinvestment in the business at a rate that will anticipate the market requirements of the future.

Harold W. Schaefer

VICE-PRESIDENT, APPLIANCE PLANNING, PHILCO CORP.

Product development key to home laundry future

PRODUCT DEVELOPMENT IS THE REAL KEY to the future of the home laundry industry. Whether we as an industry can measure up to the potentials in product de-

to Page 95 →

You're in good company... when you select Proctor Infinite Controls



Over forty range manufacturers—all users of Proctor Controls—can't be wrong! But why this overwhelming acceptance among the vast majority of range manufacturers? The answer is in these Proctor exclusives:

- No one else offers so wide a selection of automatic controls.
- Proctor Controls are designed to delight the housewife—to give her the dial-easy convenience and precise cooking control she needs and expects!
- Proctor Controls speed range sales while they speed range production—require less wiring and fewer connections.

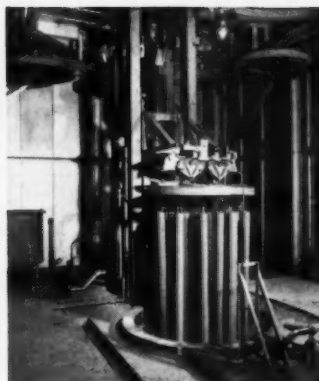
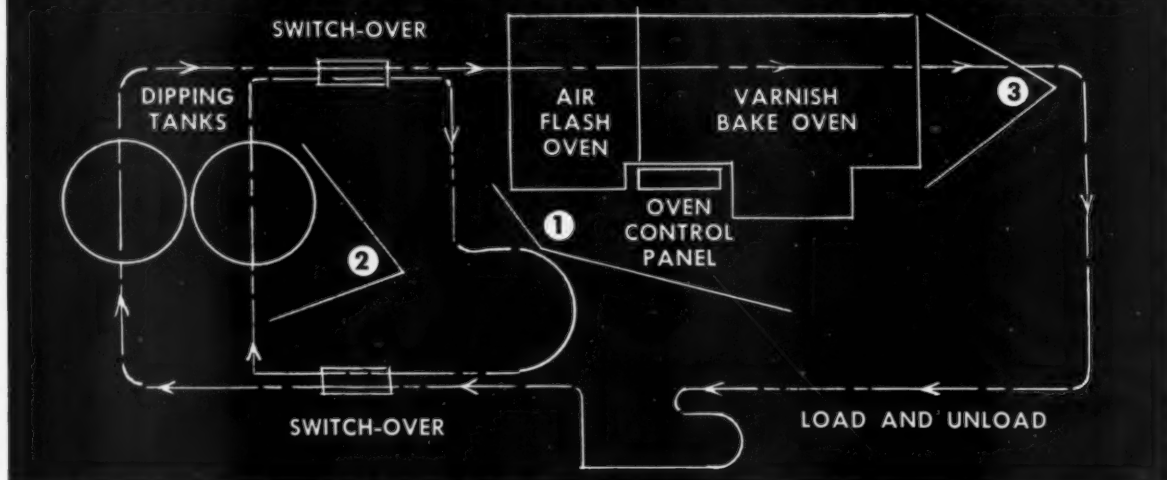
If you are not already a Proctor user, ask for a demonstration today. See your range "come alive" with the Proctor Flasher, "Varitherm" stepless Infinite, and "Selectronic" Pan Control.



PROCTOR

INTEGRATED

FINISHING SYSTEM DESIGNED FOR TODAY'S PRODUCTION ... TOMORROW'S POTENTIAL



WALKER BROS. has Doubled Production with this MOCO SYSTEM

Custom-engineered for Walker Brothers of Conshohocken, Pa., manufacturers of quality electrical distribution materials, this Michigan Oven Finishing System is *integrated* for increased product quality, lower operating cost and greater safety. All with higher production volume.

The MOCO ovens shown above feature design simplicity, hazard proof construction, with numerous safety features. Designed to speed the application of an acid and alkali resistant enamel coating over the zinc coated steel electrical conduit, the MOCO installation has doubled former production, even though it is presently operating at only 50% of its rated capacity.

Alternate dipping system uses two tanks, each with

separately-controlled, variable rate of immersion, withdrawal, and dwell time. Conveyor layout permits the use of either or both tanks at any time. MOCO Integrated Finishing System includes tank, filters and pumps, as well as complete heating and temperature control equipment for the enamel coating.

Enamelled conduit, 10 ft. long and up to 6 inches in diameter, pass through 105° Air Flash Oven, then through the 450° Bake Oven. Overlapping exit doors (above) help maintain even temperature within the Bake Oven. Conveyor holds up to a ton of conduit on each rack, moves 6'0" every six minutes; conduit passes through both ovens in 24 minutes. Except for loading and unloading of racks, entire operation is automatic.



FREE—Send for your MOCO bulletin showing typical finishing system applications and specifications, or write for the name of the MOCO Representative nearest you.

MICHIGAN OVEN COMPANY



**FINISHING EQUIPMENT DEPARTMENT
411 BRAINARD, DETROIT 1, MICHIGAN**

Washing Machines • Bonderizing Units • Dry-off Ovens • Dip Tanks
• Spray Booths • Flo-coaters • Finishing Ovens • Conveyors

Executive statements → from Page 93

velopment can be judged to the extent we have answers to the following key questions.

1. Can we create a machine that reduces the effort of washing and drying clothes?
2. Can this machine be as low in cost to the consumer as a separate washer and dryer, or lower?
3. Can this machine be so designed as to occupy no more space than a standard size automatic washer?
4. Can the performance in speed of washability and drying be as fast and as efficient as a washer and a separate dryer?
5. Can the machine be reliable and easy to service?
6. Can the machine use gas or electricity as fuel for the dryer operation?

It is obvious to the laundry industry that, when the above questions can be answered, not only has a great new product development advance been made, but that great new sales potentials are ahead of us. Philco, as one manufacturer in the laundry industry, has invested many millions of dollars in the development of a combination washer-dryer which answers these questions which state the basic needs for such a washer. Prior to the Philco-Bendix combination washer-dryer last year, no combination machine met those requirements. And both the 1959 models and the recently-introduced 1960 models represent a major contribution to the home laundry industry in the field of combination washer-dryers. These machines, and others that the industry is most certain to follow with, will mark a new upsurge in volume sales and opportunities for wide expansion in the home laundry industry.

NEW ALEMITE Hydrastat



cuts painting costs up to 40%

- Speeds production . . . minimizes housekeeping . . . increases safety.
- Puts paint only where you want it! Atomizes paint by high pump pressure—without use of heat, without atomizing air!
- Virtually eliminates overspray and bounceback . . . reduces air equipment and air consumption.

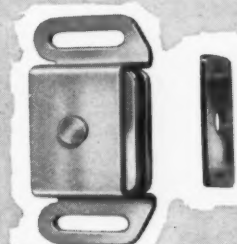
Write for new illustrated literature!



ALEMITE
DIVISION
STEWART-WARNER
CORPORATION

Dept. BU-109, 1850 Diversey Parkway, Chicago 14, Illinois

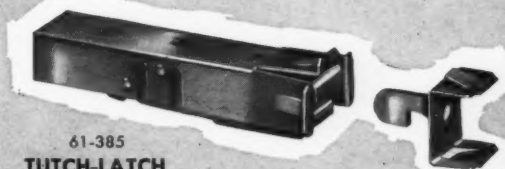
NATIONAL LOCK Functional hardware for metal cabinets



61-675

MAGNETIC CATCH

"Floating action" ceramic type permanent magnet. Aluminum housing resists heat. Elongated holes and extension on housing facilitate use where shelf is recessed.



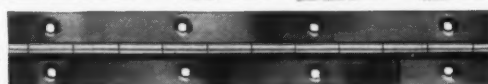
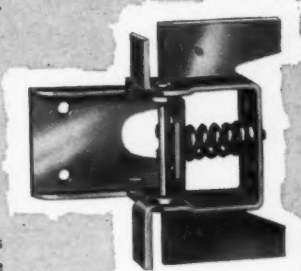
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TUTCH-LATCH

Opens door automatically with gentle touch of hand. Holds door securely when closed. Installation made by "snapping" latch housing into pierced hole in cabinet. Strike has "snap in" application.

58-574A CONCEALED SPRING HINGE

Toggle spring action holds door open at 90° position and securely closed. Eliminates need for catch on applications not requiring positive latching action. Rugged. Easily installed.



CONTINUOUS HINGES

Offered with equal and unequal wings . . . with and without holes. Selection of widths (up to 4") and lengths (up to 96"). Finishes range from plain steel to hand-buffed chrome.

Write us!

STANDARD AND CUSTOM REFRIGERATOR HARDWARE • PLASTICS
THERMOPLASTICS • RANGE HARDWARE • SCREWS AND BOLTS
"All from 1 source"



NATIONAL LOCK COMPANY
INDUSTRIAL HARDWARE DIVISION
ROCKFORD, ILLINOIS

here's another FIRST from chicago vit



AUTOMATIC FLOW COAT EQUIPMENT

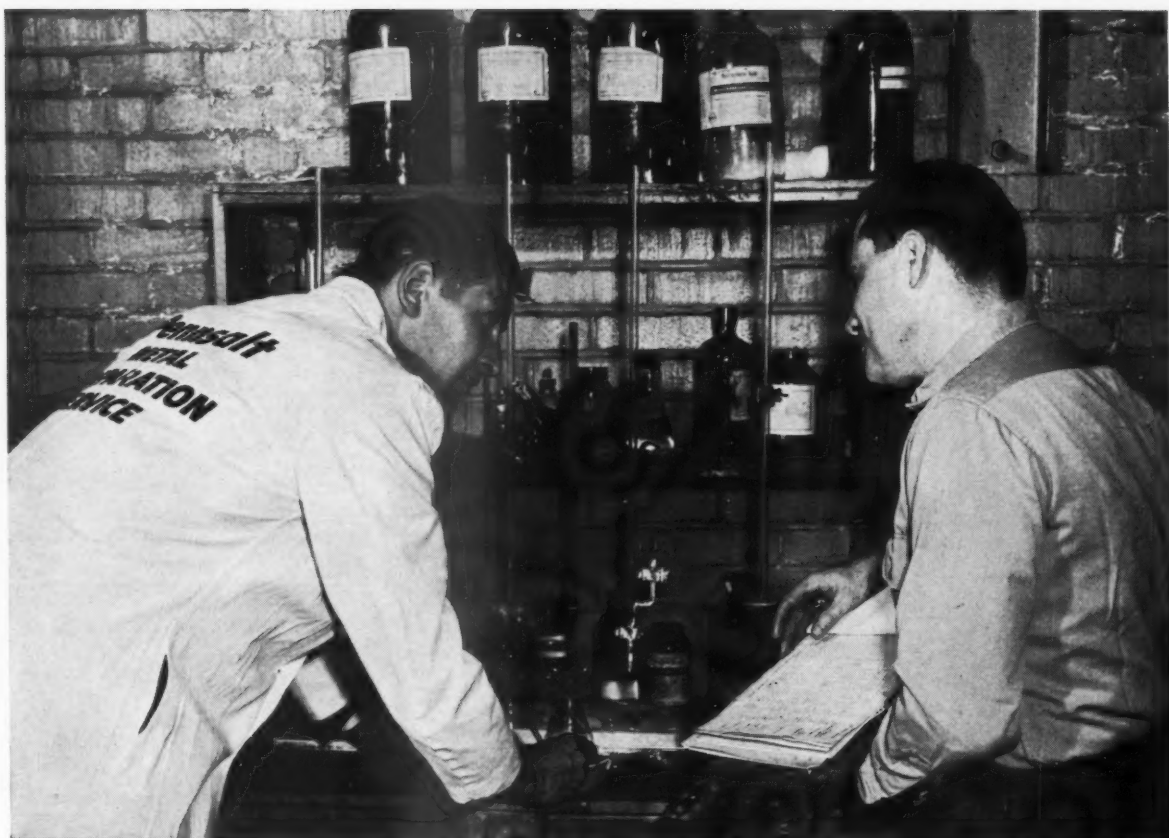
for the Home Laundry Industry

Chicago Vit LEADERSHIP first brought you ALKALI RESISTANT GROUND COATS . . .
first brought you STEAM VAPOR RESISTANT GROUND COATS . . . first brought you
ALKALI RESISTANT TITANIUM COVER COATS . . . Now brings you AUTOMATIC FLOW
COAT EQUIPMENT—exclusively engineered and manufactured by Chicago Vitreous.

Ask your Chicago Vitreous representative to discuss the uniform quality and other production
advantages that flow coating may hold for you.

Chicago Vitreous **CORPORATION**

A Division of the Eagle-Picher Company
1425 South 55th Court Cicero 50, Illinois



Pennsalt PLANNED SERVICE

helps you get higher efficiency, economy, quality
for "a better start for your finish®"

Pennsalt's Metal Preparation Service Plan gives you complete, personalized service by a nation-wide staff of trained specialists. You get periodic surveys of your processes . . . help in modernizing with automatic equipment . . . installation and start-up aid . . . laboratory analyses of your special problems . . . fast emergency service . . . plus other important aids to better finishing.

Service like this . . . exclusive from Pennsalt . . . is another way you profit from Pennsalt's "system approach" to metal surface preparation. Pennsalt supplies a complete line of quality processing compounds, and a plant-proved line of automatic surface treating machines . . . integrates chemicals, machines and service to help you get superior finishing with top economy.

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for your copy of this booklet on Pennsalt's Metal Preparation Service Plan, or see your Pennsalt representative for more information on Pennsalt service, materials or machines. Write to Dept. 163.



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CLASSIFIED

PRODUCT DEVELOPMENT Painted Metal Products

A man is wanted by Reynolds Aluminum Supply Company to conceive and develop new products which can be made from baked enameled metal sheets. The company offers two modern roller coating paint lines, extensive forming and fabricating facilities, an atmosphere of movement and challenge, and the security of a place in a growing industry. The man we need must offer energy, ambition, design and development ability, and an inquiring mind. Send a complete resume of experience and education, along with your salary requirements, to S. Benton Davis, Reynolds Aluminum Supply Company, P.O. Box 1367, Atlanta, Georgia. Early application will receive immediate consideration.

APPLIANCE ENGINEERS & SALESMEN

Leading independent manager of major kitchen appliance, name brands, has continuing growth need for creative engineering and sales staff.

Opportunity for profit incentives above base salaries competitive with best in field.

Send resume of accomplishments and location preference to **Director, Sales & Engineering Personnel**, Box 10A, Dana Chase Publications, York St. at Park Ave., Elmhurst, Ill.

New products

→ from Page 60

polystyrene. It is said to eliminate "stress crazing," a weakening of the foam caused by common solvents. Markets for the foam include the refrigeration, furniture, boating, and automotive industries. For further information, contact Special Projects Editor, **METAL PRODUCTS MANUFACTURING**, York St. at Park Ave., Elmhurst, Ill.

Throwaway Sanding Discs

Throwaway sanding discs that are said to reduce cost greatly on the wet sanding operation have been recently introduced. Made of foam plastic, the pad has tapered edges to minimize tearing. Only one backup pad is needed with any size sanding disc. Advantages claimed include low unit cost, quick installation and replacement, longer life, and engineering of the discs to avoid scratches and marks. For further information, contact Dept. MPM, Carpart Corp., Owosso, Mich.

Dual Measuring Shear Line

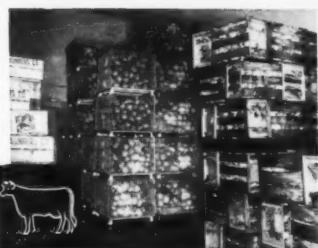
Combining electronic and mechanical surface measuring, this shear line is designed for extreme flexibility in processing coil stock to sheets. Minimum and maximum length restrictions are eliminated and the system allows instantaneous length changeover. For further information, contact Dept. MPM, Dahlstrom Machine Works, Inc., 4227 W. Belmont Ave., Chicago 41, Ill.



Aircraft: Manufacturers of aircraft components depend upon Palletainers for more efficient, economical parts warehousing, inventory and safer transit.



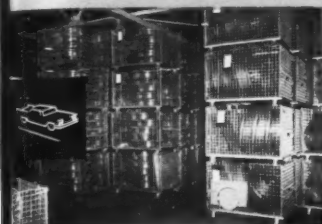
Chemical: Processors of finely ground or pulverized materials are rapidly turning to Palletainers as a safe, sure method for bulk-load handling.



Agricultural: Canneries and foodstuff processors are using Palletainers for storage, processing and shipment of their products. Palletainers are ideal for cold storage or fast-freezing.



Railroads: Car loading and unloadings are faster, shipments safe and secure with no damage to contents and car loading space is properly used.



Automotive: Auto, truck and tractor manufacturers have long been aware of Palletainers advantages for their varied processing, storage, warehousing and shipping operations.



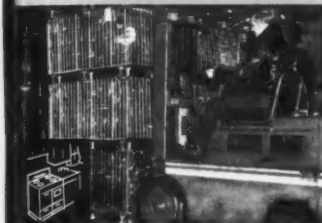
Electronics: Manufacturers simplify their housekeeping with Palletainers. Indoors or out, Palletainers efficiently and economically replace barrel, box and bin storage equipment.



Food Processing: Palletainers are well known to the food freezing and processing industries because of their aeration and easy sanitation features.



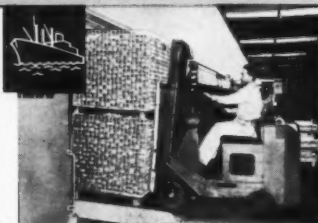
Utilities: Gas and electric companies find that Palletainers simplify warehousing, storage and inventory. Contents are protected, clean, visible—ready for use.



Appliance: Manufacturers of appliances prefer Palletainers for fast, safe transportation of delicate or fragile products prior to packaging operations.



Foundry: In foundries and forge plants, Palletainers have no equal. Handle capacity loadings, speed trucking and delivery. Can be quickly and safely stacked to conserve storage space.



Exporting: Palletainers provide the protection for any cargo. Delicate fruits or rugged castings—all are easily, economically loaded, transported or stored.



Textile: Textile and milling concerns simplify handling problems with Palletainers while providing protection for those unusual, hard to handle items.

PALLETAINERS®: applications unlimited

No matter what you manufacture, store or transport... you need Palletainers! For Palletainers carry loads up to 6000 pounds with perfect safety. Form-welded steel legs provide 8-way entry for fork lift trucks and secure ceiling-high stacking. Full visibility permits speedy inventory in or out of storage and sturdy steel rod, welded mesh protects cargo perfectly.

USP Palletainers are available in a wide range of sizes, types and capacities to match each specific plant need. Why not survey your plant today and start your "savings program" the Palletainer way?



Gentlemen:

Please send me complete information on USP Palletainer applications ☐

Please have one of your materials handling engineers contact me at once ☐

Name _____ Title _____

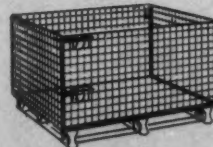
Company _____

Address _____

City _____ Zone _____ State _____



Hi-Lode
2,000—4,000—6,000 lb.
capacities



Bearing Plate
2,000—4,000—6,000 lb.
capacities



Bulk Lode
2,000—4,000—6,000 lb.
capacities



Warehouse
2,000—4,000 lb.
capacities



All Palletainers fold down to save approximately 75% of return space shipping or storage space.

UNION STEEL PRODUCTS CO.

500 N. BERRIEN ST., ALBION, MICHIGAN

B. R. Metals, Inc., Compton, Calif.

Croname, Ltd., Waterloo, Quebec, Canada

Special Offer... Try these tested, proved-in-service containers on a 60-day memo billing basis. (Your obligation is freight, only.)



NOW OFFERS BROADER SERVICE AND NEW PRODUCTS

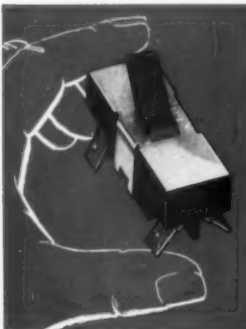
1 SINGLE POSITION INFINITE CONTROL

The N-14 Control enables a heating unit to deliver all or any portion of its heating capacity. Proportioning of heating capacity is accomplished by a pre-setting of the control knob, thereby controlling the time of contact dwell. Furnished in various time cycles depending upon your requirements, i.e., from 4 R.P.M. to 1/2 R.P.M. cycle motors.



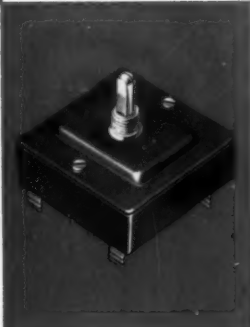
2 TOGGLE SWITCHES

The unusual simplicity of the new TEP Toggle Switch design achieved by Tuttle Research Engineers, now provides a dependable, top-quality switch at lower cost. Considerably smaller than comparative switches offering the same variety of contacts, it includes provisions for four-way wiring connections. There are only 11 working parts, and the complete switch weighs less than one ounce.



3 HEAT SELECTOR SWITCHES

Series 3000 rotary snap-type switches, also manufactured by TEP for electric ranges, air conditioners, space heaters and related applications, feature positive, trouble-free contact action and 7-heat selection. They are available either with or without a pilot light and handles to suit your needs. Write today for sample and quotation.



4 TUBULAR HEATING ELEMENT

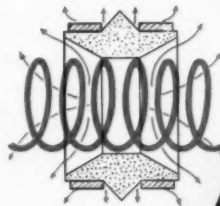
This element is ideal for a wide range of applications. It's highly efficient in heat guns, hair dryers, space heaters, hot food vendors, photo print dryers, and other products where air is to be heated while flowing through a tube or nozzle. It can be controlled thermostatically and furnished in ratings from 500 to 2000 watts at 115 or 220 volts.



For Appliance and Related Applications

Here is the present line of Tuttle products designed to help you manufacture better electrical products. New in the group are the single position infinite control and the tubular heating element. The Single Position Infinite Control was formerly manufactured and sold by Tuttle & Kift, Inc., and we are pleased to announce our acquisition of the manufacturing and sales rights to this highly efficient control. The Tubular Heating Element was recently designed by us for use in hand dryers. It has many other possible uses. We would welcome the opportunity of working with you on any of your problems involving any one or more of these, or other electrical products. Merely call or write.

Cross-sectional view of new TEP insulator and cross-bar design. More space for air circulation assures better heat dissipation, longer wire life.



PATENT PENDING



5 OPEN COIL HEATING ELEMENTS

The design and manufacture of "open coil" heating elements has long been a major TEP service to the appliance industry. TEP has designed and developed many new and exclusive features, such as the one illustrated with diamond shaped insulators. Call or write today for TEP design and engineering assistance on any job. There is no obligation.



WRITE TODAY for complete data and quotations

TUTTLE ELECTRIC PRODUCTS, Inc.

KIRKLAND, ILLINOIS • PHONE: 37

MANUFACTURERS OF OPEN COIL HEATING ELEMENTS, SWITCHES, CONTROLS

